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GEOGRAPHY READERS—I

THE EARTH AND ITS
PEOPLE

BY

I. O. WINSLOW



BOSTON, U.S.A.

D. C. HEATH & CO., PUBLISHERS

1910

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WINSLOW'S
GEOGRAPHY READERS

THE EARTH AND ITS PEOPLE
THE UNITED STATES
OUR AMERICAN NEIGHBORS
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PREFACE

THE purpose of this series is to occupy middle ground between the customary text-books and geographical readers, and to combine the essential advantages of both.

The two extremes, whether employed separately or together, fail to meet the practical needs of the average school-room. The text-books adhere to the scientific method, at a sacrifice of the practical or pedagogical method. The teacher finds it difficult either to assign a definite lesson for study from the books or to use them for class exercises in reading and discussion. In their completeness the text-books contain so much that selection is difficult, and the attempt to teach the whole is disastrous.

Geographical readers, in the form of stories of travel, go so far to the other extreme that they also fall outside of the daily task of the geography teacher. Courses of study very properly call for definite concepts and facts. After serious attention has been given to these, there is but little time to spare in the regular curriculum for lighter reading.

There is need of books that shall select the essentials and set them forth in such an explicit and straightforward manner that they may be easily used, both for preparatory reading and for study and recitation. It is the design of these books to supply that want. Since they occupy a unique position, they should not be judged according to existing standards, but according to practical needs.

The first book of the series is intended to cover the primary or introductory course in geography. Unusual attention

has been given to the industrial and commercial aspects of the subject, in the belief that these are of fundamental importance and of natural interest to young children. The fact that political geography, or the geography of locations, is wrought out in close connection with such industrial and commercial development renders it more significant and more easily remembered.

In bringing a treatment of the entire world within so small a compass, it is manifestly impracticable to assume a very familiar or diffuse style of presentation. On the other hand, the attempt has been made to give each topic sufficient space to make it interesting and intelligible. While there can be no pretense that the ground has been completely covered, it is the belief of the author that the book contains all that it is essential or wise to include in an elementary treatment of the subject.

Topics of fundamental importance are fully explained in the text, but many minor points, which may be easily ascertained or inferred by pupils, are reserved and given at the end of each chapter, either in the form of questions or brief statements accompanied by questions. These exercises, supplemented by map sketching and other work that is here and there suggested, will provide definite lessons for the study period, which many teachers find it difficult to arrange.

The review questions relate to principal points explained in the text, and may be employed either for the daily assignment of lessons or for occasional review.

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THE EARTH AND ITS PEOPLE

Geography

GEOGRAPHY teaches us about the earth on which we live. By reading or studying geography we learn about the land and water, about the plants and animals, and especially about the people who live in the different



A Pleasant Way to learn Geography

countries. We also learn about the form, size, and motions of the whole earth.

Much of this knowledge we could get in a very pleasant way by traveling, visiting many countries, and seeing things with our own eyes. But this would take a long time, and for most of us it is not possible. After seeing what we can of the things near home, we must

learn geography by reading and studying books, or by listening to the accounts of other people.

There are different kinds of homes, and the things that can be seen near some homes are very different from those that can be seen near others. Many people live in farmhouses, with no other houses very near. Many live in villages, where there are a few houses near one another. Many others live in towns, which



A Small Village with Neighboring Farms

are larger than villages. About one third of all the people of our country live in cities.

Some people who live in the country often wish that they might move to a city, and many who live in cities would be glad to live in the country. It would be better for most people to be satisfied where they are, because there are pleasant and unpleasant things in both country life and city life.

In the country it may be lonely with no neighbors near; it may be a long distance to school or church; the mail may come not oftener than once each day; there may be no store very near, where things that

are needed can be bought. But there is fresh air to breathe; the food from the farm is fresh and wholesome; green grass and trees are to be seen everywhere; there is always plenty of room for boys and girls to play and grow strong; and there are quiet nights for restful sleep.

In the city it may be noisy; the houses may be so near together that there is no room for lawns or



A Part of a City with Crowded Houses

yards in which children can play; the buildings may be so high and the streets so narrow that only a little of the sky can be seen; it may be very warm in summer; it may not be possible to get fresh milk and vegetables directly from the farm. But there are plenty of people for company; there are many entertainments, and interesting things to see; the school, the church, and the doctor are not far away; and the father and perhaps other members of the family may have business or work to do which they would not have in the country.

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foot of the slope or into some brook or river. Grains of sand and other bits of rock that are too large to be taken up in the water may be rolled or pushed along.



A Sluggish Stream

When a stream reaches a low place where it does not run so fast, the soil may sink and form a mass of mud. Where grass or trees are growing, the roots hold the soil, and not much of it can be carried away, but where there is nothing growing, soil is washed away much faster.

1. Why do we often find small pieces of stone lying near a large rock?
2. Some stone doorsteps that have been used many years have low places worn in them. What has become of the parts that are gone?
3. What becomes of leaves that fall and trees that die in a forest?
4. What causes many brooks to look muddy, especially after a rain?
5. Is more soil carried away by running water from steep hillsides or from gently sloping land?

2. Brooks and Rivers. Hills and Valleys

A small stream of water is called a brook, or creek. After a brook flows on for a time, down to lower places, it may meet other brooks coming from other regions. The brooks will then join, making a larger brook. After this other brooks may flow in, until the stream may become large enough to be called a river.

Wherever a stream runs down a steep slope, it flows swiftly ; but where the ground does not slope so much, it flows more slowly. Brooks and rivers that run rapidly down steep slopes pick up particles of clay and sand, and even small stones, but where they run more slowly there is not force enough to do this. Here the stones are not moved, large particles of sand sink, and only very small pieces of soil are carried farther along.



River, Valley, and Hills

A high mass of land is called a hill. A very high hill is called a mountain. A low space between hills or mountains is called a valley. Many valleys have been formed by the force of running water. If you should go down from a hill into a valley, you would be likely to find a brook or a river. Probably a long time ago there was no such valley. The land was nearly level, and the brook or river was running across it. The running water slowly carried away the soil beneath it, and when the rock was reached it wore this away also by dragging sand and gravel across it. During every rain-

storm small streams carried down soil and crumbling rock into the brook or river from both sides, and so the valley was deepened and widened.



A River System

In some parts of our country there are many hills and valleys, but in other parts the land is smooth and nearly level or rolling. A broad extent of land that is level, or nearly level, is called a plain or prairie.

1. Why do brooks generally meet, instead of flowing on alone?

2. Draw lines on a sheet of paper, showing how brooks flow together to form a river.

3. Do we see stones, without any mud, in the bed of a stream where the water runs slowly, or where it runs swiftly?

4. Some valleys are called young valleys and some old valleys. Which are usually the wider?

3. The Use of Soil

All animals and people depend for their food upon that which grows from the soil. If there were no soil, there could be no grass, grain, vegetables, trees, or other plants. No cattle, horses, sheep, or other animals that feed upon any kind of plants, could live, and animals that eat the flesh of other animals would have no food of this kind, because there would be no other animals to furnish it. If there were no plants or animals, of

course there could be no people. Until some soil had been formed from the rocks there were, therefore, no plants, or animals, or people upon the earth.

Plants get a part of their food from the air through their leaves; but they also get much of it from the soil. A plant sends a great number of roots and tiny rootlets down into the soil to gather food. Some of the rootlets are so small that they can scarcely be seen. Plant food is dissolved in the moisture of the soil. It is taken into the rootlets and passes up into the plant.



A Plant, showing Roots and Rootlets

In many places plants do not thrive because the soil contains either too little food or too little moisture, or both. It is possible, however, for soil to contain too much moisture. Most plants do not thrive in soil that is continually filled with water.

1. When we water plants, how do they get the water?
2. Why cannot a plant obtain food from soil that is dry?
3. How does plant food in soil become food for people?
4. Why must plants have many small rootlets?

4. Farming Land

Farmers, who raise wheat, corn, grass, and other crops, try to select the best land for the purpose. They must plow the land and harrow it. This loosens the particles

of earth and makes more spaces, so that the roots of plants can more easily stretch out and find food.

Level land is generally best for farming, because it is not easy to drive teams about on hillsides in doing farm work. Besides this, the rain washes some of the best parts of the soil down to the more level land below, and the soil remaining on the hillsides may not contain food enough to support crops. It is not easy to work upon



A Hillside from which the Fertile Soil has been washed

land that is full of rocks, hence such land is not very good for farming.

Farmers cannot raise good crops where many tall trees are growing near one another. The roots of trees in soil make it difficult to plow the land. Crops will not thrive unless they can have sunlight, and the leaves of trees produce shade. Forest trees must be cut down and the large roots must decay or be taken from the soil before good crops can be raised.

A farmer must also have land that is well supplied with water. In some parts of the country it does not rain enough in summer to keep the soil moist. If crops

were planted there, they might grow for a time ; but when the dry weather came, they would wither and die.

Regions where there is not enough rain are called arid. In some arid regions canals or flumes are made. These carry water long distances from rivers or reservoirs. The water from the canals is permitted to flow over the land when it is needed, and thus the land is moistened. This method of watering land is called irrigation.

1. Should you think that land would be better for farming where the soil is deep or where it is shallow ?
2. Is the soil usually deeper on hillsides or on level land ?
3. Why is land in river valleys generally good for farming ?
4. Why does an unusual amount of rain sometimes injure the farmers' crops ?



5. Grazing Land and Timber Land

Land that is too hilly, or too rocky, or that contains too many trees for farm crops, may produce grass year after year. On such land cattle, sheep, and other farm animals may be raised. It is called grazing land or pasture land. Many farmers have pasture land on which their animals graze during a part of the year. On farms where the land is all good for crops a part of the good land is sometimes used for pasture.

Some arid regions of our country, where the land is not watered by irrigation, are used for grazing. Very large herds of cattle or sheep roam about, feeding upon the grass. Men who are engaged in the business of grazing are called ranchmen, and the tracts of land upon which they raise their cattle or sheep are called ranches.



A Mountain Forest

Those who care for the cattle generally ride on horses and are called cowboys.

Some land is suitable neither for raising crops nor for pasture, but is covered with forest trees. Such land is called wood land or timber land. There are hundreds of small forests in various parts of the country, but in some parts of it there are vast forests covering all the land for many, many miles.

Forest trees are of great value. They supply boards and timber for building houses and for furniture. They are useful as fuel to keep us warm. When trees are planted about our homes, or along the streets, they give us shade in summer and protect us from the winds.

There is still another kind of land in some parts of the world where so little rain falls that not even grass will grow. Such regions are called deserts.

1. Why will not grass grow well under the trees of a forest?
2. Why do not farmers cut down all the trees on their land?
3. Give the names of as many kinds of trees as you can.
4. Name as many different uses of trees as you can.

6. Ponds and Lakes. The Ocean

A brook or river always flows down the slopes until it reaches the lowest place that it can find. When it comes to a large low space, like a basin hollowed out in the ground, it fills this basin full, runs over the edge on the lowest side, and flows on. Such a basin or body of water is called a pond. If it is very large, it is called a lake. There are many ponds and lakes in valleys among the hills.

Rivers continue to flow toward lower places until they reach the great ocean. So many rivers flowing into the ocean would cause its surface to rise, if the water all remained. But it does not all remain. We know that when there is a pool of water on the doorstep or on the sidewalk after a rain, it will soon disappear. We say that it dries up or evaporates. We mean by this that the air takes it up. So, over the surface of the vast ocean, the air takes up as much water as all the rivers are pouring in.

When the wind blows toward the land, the moist air that is over the ocean moves over the land. There some of the moisture falls in raindrops upon the land and flows away again in brooks and rivers to the ocean.

If we should sail away upon the ocean in a ship, after a time the land behind us would be entirely out of sight, and we should see nothing anywhere about us except water and other ships. We might sail for many days, and even for weeks, without seeing land.

When the wind blows hard, it heaps up the water on the ocean into high waves. Ships are so built that



An Ocean Steamer

waves will not be likely to upset them or break them to pieces, but sometimes the wind and waves in a storm drive ships against the land or upon rocks and break holes in them and sink them.

In many dangerous places there are lighthouses, in which very bright lights are kept burning when it is dark. These enable sailors to know near what land they are sailing and to steer their ships away from the shore.

There are also many life-saving stations where men watch for ships that are in trouble and try to help the persons who are in danger of drowning.

1. How do boys sometimes make a pool or pond on a rainy day?
2. Can you tell how beavers make ponds?
3. Why do rivers flow into the ocean?
4. Why does not water flow out of the ocean?
5. Make a drawing showing a lighthouse on the shore of the ocean.

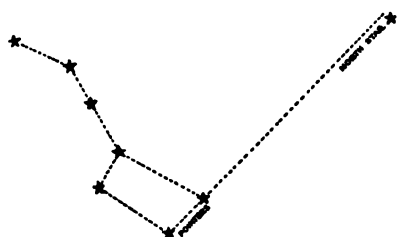
REVIEW

1. Of what is soil composed ?
2. What should we find under the soil ?
3. How are rocks changed to soil ?
4. How is soil moved about ?
5. What is a brook ? A river ?
6. Where can brooks and rivers carry away much soil ?
7. What is a hill ? A mountain ?
8. What is a valley ?
9. How have some valleys been formed ?
10. What is a plain ?
11. What would be the effect if there were no soil ?
12. How do plants get food from the soil ?
13. Why do farmers plow and harrow land ?
14. Why is level land best for farming ?
15. Why cannot good crops be raised among forest trees ?
16. What are arid regions ?
17. What kind of land is called grazing land ?
18. What do forest trees furnish us ?
19. How is a pond or lake formed ?
20. Why does not the ocean rise higher ?
21. What is the use of lighthouses ?

**A Lighthouse on a Rock****7. Directions**

When we are asked in what direction one place is from another, we say it is north, or east, or in some other direction. Many roads and streets are so made as to extend north and south, or east and west. If you were traveling in a forest, you would be lost if you did not know in which direction you should go, or how to keep to some particular course. Ships must know the direction in which they should sail to reach a certain city on the other side of the ocean, and they must have some way of telling whether they are steering in the right direction.

At night, when the sky is clear, we can tell the directions by finding the North Star. Most people



The Dipper and the North Star

know what is meant by the Large Dipper in the northern sky. The two stars of the edge of the dipper, opposite the handle, point toward the North Star. North is the direction along

the ground toward the North Star.

If you should stand with your face toward the North Star, your back would be turned toward the south. If you should then stretch your arms straight out from your sides, your right hand would point toward the east and your left hand toward the west.

At certain times in the year the sun rises in the east and sets in the west. During most of the year it rises and sets somewhat north or south of east and west, but we can form a general idea of east and west by noticing sunrise and sunset.

Halfway between north and east is northeast; halfway between east and south is southeast; halfway between south and west is southwest; halfway between west and north is northwest.

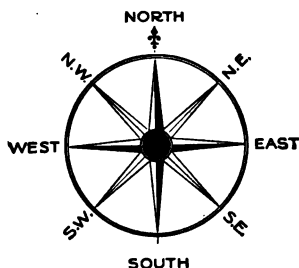


Chart showing Directions

We can tell any direction accurately by means of a compass when the stars or the sun cannot be seen. The

needle of a compass is a magnetized piece of steel turning easily upon a pivot. When the needle is still it points toward the North Magnetic Pole, which is at some distance from the North Pole. In all parts of the world the difference is known between north and the direction toward the North Magnetic Pole, and by making allowance for this difference, north and other directions can be easily found. Every ship at sea is steered by the needle of a compass.



Compass

1. Tell in what direction from the center of the schoolroom each of the windows is.
2. In what direction from the schoolhouse is your home?
3. Name the different directions in order, beginning with north and continuing around as the hands of a clock move.
4. From a point on a sheet of paper, laid with the top toward the north, make lines in the different directions. Write on the lines the initial letters of the directions.

8. Maps

We cannot see much of the country or many houses and trees at once, unless we can go to some high place and look down. From the top of a high hill we might see over the country for some distance. If we could go up very high in a balloon or an airship and look down upon a city, we should see the tops of the houses and many streets extending in different directions. If we could go up high enough, we might see a number of cities, and hills, and ponds, and rivers spread out on the scene beneath us.

A map shows how some part of the earth would appear if we were looking down upon it. A map that represents hills and mountains and level regions is called a relief map. A map that looks as if the country were all level is called a plane map. A plane map shows



A Relief Map

where places are and how far it is from one place to another.

A map must be so much smaller than the surface which it represents that two places really miles apart may look on the map as if they were very near together. An inch on a map may represent many miles on the earth. In order that we may know how far apart places are by looking on a map, we must know how many miles on the earth are meant by an inch on the map. There is usually a line on each map that tells this.

The number of miles to an inch is called the scale of the map. When the scale is ten miles to an inch, an inch on any part of the map means ten miles. If a

map of the same region were made half as large, an inch on this map would mean twenty miles.

It is generally understood that north is toward the top of any map and east toward the right side. Dots on a map show where the cities are, and waving lines show the rivers.

1. Which looks more as the country really looks, a plane map or a relief map?

2. Sketch a map or plan of the schoolroom as it would look if you were looking down upon it.

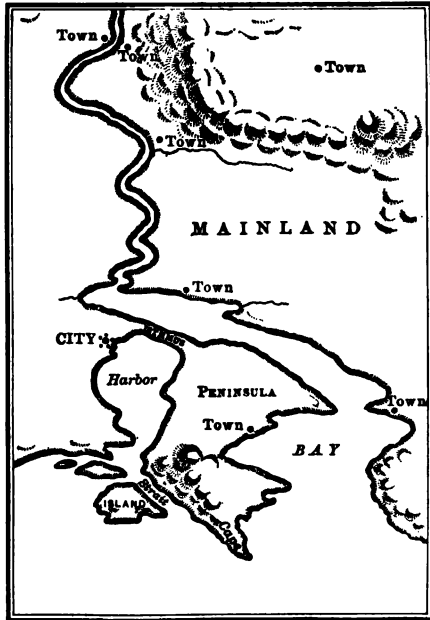
3. Make a plane map, showing some imaginary land, with cities, rivers, and the ocean.

4. Find how many yards long the schoolroom is and make a plan of it so small that an inch will mean a yard.

9. The Earth

Most of the people of the world once believed that the earth was flat. They did not dare to sail very far away from the land because they feared that they would reach the edge of the earth and fall off. But Christopher Columbus believed that this was a mistake. He thought that the earth was round, like a ball, and that it would be possible to sail around it.

With a few companions, Columbus bravely sailed away from Europe toward the west, across the broad



A Simple Map

ocean. After a long time he reached some islands near the coast of America. Other sailors afterwards discovered the mainland of North America, and some finally went entirely around the earth, thus proving that the earth is round.

It is difficult for us to understand how the earth can be round, because we cannot see enough of it at once to make it seem like a ball or a sphere. We know that the



Ships Gradually Disappearing

moon is round because it is so far away that we can see its whole form. If there were people living upon the moon, the earth would appear to them as the moon appears to us, except that the earth would appear larger.

If we watch a ship that sails out upon the ocean, we shall see that it seems to sink as it moves farther away. At first it seems to sink a little until the decks are out of sight; then the smokestack slowly settles down, and finally even the smoke disappears. If we should watch for a steamer that is expected to come in, we should see first the smoke, then the smokestack, and

then the entire ship. This is because the surface of the ocean is curved, as it must be on a sphere.

We do not, in the same way, see objects sink out of sight when we look over the land, because the surface of the land is not even, like that of the sea.

It is not easy for us to understand how there can be people living on the other side of the earth. It would seem to us that they must be standing with their heads downward and that they must fall off from the earth. But the people on the other side of the earth have the same idea about us. This is simply a notion that we cannot avoid. Everything is pulled toward the earth by a force called gravity, and nothing can fall off. Wherever any one is, away from the earth is *up* and toward the earth is *down*.

1. If you should go around the earth, going always toward the west, from what direction would the people at home see you returning?

2. From what direction would they see you returning, if you should go toward the east?

3. From what direction would they see you returning, if you should go toward the northwest?

4. Why cannot we see waves on the ocean very far away?

10. Land and Water

It is not possible to make a map or picture that will represent all of the surface of the earth at once, because when we are looking at one side, the other side is out of sight. To show the whole we must have two maps, one for each half: A half of a sphere is a hemisphere. Maps of the two halves of the earth are called maps of the hemispheres. While the surface of the water is three times as great as that of the land, this

does not mean that the greater part of the whole earth is composed of water. The water of the ocean simply covers a large part of the surface of the earth. The depth of the ocean seems to us to be very great, but it is really very little when compared with the size of the whole earth. The average depth of the ocean is between



The Western Hemisphere

two and three miles, but the distance from the surface of the earth to its center is nearly four thousand miles.

The bottom, or bed, of the ocean is muddy or sandy ground, and under this is solid rock, like the rock beneath the soil on dry land. The water spreads out and covers all the earth except those parts which are high enough to reach above it.

The largest bodies of land on the earth are called continents. The continents of North America and South America are in the Western Hemisphere. The other continents are in the Eastern Hemisphere.

By sailing east from North America we might reach the continent from which Columbus sailed. This is



The Eastern Hemisphere

called Europe. The continent east of Europe is called Asia. Europe and Asia are really parts of the same body of land, but in ancient times this was not known and different names were given them. South of Europe is the continent of Africa. The smallest of the continents is Australia.

Besides the large bodies of land there are many

smaller ones that have been found in various parts of the ocean. These are called islands. Islands are of many sizes. Some are mere rocks reaching above the water, while others are large enough to be the homes of millions of people.

All the largest bodies of water on the earth are connected. We often think of them as forming a single body and call it the sea, or the ocean. But different parts of the ocean have different names, and we may say that there are five oceans: the Atlantic, the Pacific, the Indian, the Arctic, and the Antarctic.

Some smaller parts of the ocean that are partly surrounded by land, are called seas, gulfs, or bays.

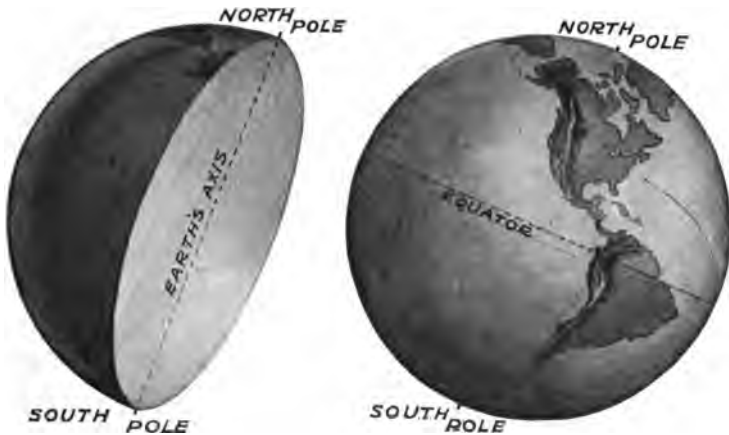
1. How many continents are there?
2. In what direction from North America is South America?
3. In what direction from North America is Africa?
4. In what direction from Asia is Australia?
5. In what direction from Africa is South America?
6. State in what direction from some continent each of the oceans is.
7. How many large islands can you count upon the maps of the world?
8. Sketch maps, showing the border lines, or outlines, of the continents.

II. The Rotation of the Earth

The earth does not remain still, but continually turns around. It turns entirely around once in twenty-four hours. This motion is called the rotation of the earth. If a piece of wire were pushed through the center of an orange and the orange were turned, with the ends of the wire held between the fingers, we should see how the earth rotates.

Of course, there is nothing like a wire passing through the earth, but we can imagine a line passing through it.

This imaginary line we call the axis of the earth. The points where the axis would pass through the surface of the earth, as the wire passes through the skin of the orange, are called the poles of the earth. One of them is called the North Pole and the other the South Pole. The axis of the earth points toward the North Star.



Hemispheres, showing Axis, Poles, and Equator

We can imagine a line passing round the earth half-way between the poles. It would make a circle around the earth. This imaginary line is called the Equator.

The light by which we see in the daytime comes from the sun. The sun always shines upon the earth, but the light can cover only one half of the earth's surface at any time, because the other half is turned away from the sun. The people who are on the half of the earth that is turned away are in darkness. If the earth stood still, it would always be daylight on the side toward the sun and always night on the other side. As

the earth turns around once a day, it carries the people around, taking them into the sunlight for a part of the time and back into darkness for the rest of the time.

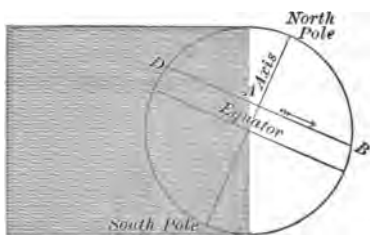
We do not notice that the earth is moving and that we are going around with it very fast, because everything



One Half is in the Light, and One Half is in Darkness

that we see is moving also and we do not go past anything and leave it behind. We can realize the motion of the earth best by thinking of sunrise and sunset. Early in the morning we cannot see the sun, because a part of the earth is in the way. As the earth turns, carrying us toward the east, we begin to see the sun. At sunset we are carried around so far that again a part of the earth is between us and the sun, which appears to sink out of sight.

When the earth turns, as shown by the drawing, if we were at *A*, we should be carried to *B*, then to *C* on the other side of the earth, then to *D*, and back to *A*.



1. What time of day is it at *A*, where it is beginning to be light?
2. What time of day is it at *B*?
3. What time is it at *C*, on the other side of the earth?
4. What time is it at *D*?
5. Make a copy of the drawing, showing how the sun shines upon the earth.

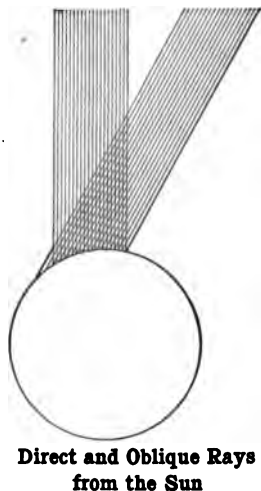
12. Heat from the Sun

The sun gives the earth heat as well as light. If the sun did not shine upon the earth, it would be too cold for anything to live. In the night when the sun is not shining upon us, the air becomes cooler.

It does not become very cold, because the earth around us has been warmed during the day and cools slowly, as a piece of iron or stone cools slowly after being heated.

The sun gives the most heat to the parts of the earth directly beneath it. Its light and heat come down vertically upon such places. The sun is most nearly overhead at places near the equator, and there the weather is always very warm. It is never cold enough there to freeze water and the people need to wear but little clothing. This hot region is called the torrid region.

In regions farther away from the equator the sun is not directly overhead. There heat comes from the sun in a slanting direction, or obliquely, and does not warm the earth so much as in the torrid regions. The people need to wear warmer clothing and can do more work without suffering from heat. These regions are called temperate regions.



In the regions near the poles the sun gives the earth still less heat, and the weather is extremely cold. The ground is mostly covered with snow and ice, and much of the time the people need to dress with heavy fur clothing to keep from freezing. These regions are called frigid regions.

1. Why is it usually cooler before sunrise than after sunset?
2. Should you think it would be cooler in the morning when the nights are long or when they are short?
3. Why is it usually warmer at noon than early in the forenoon or late in the afternoon?
4. Make a copy of the drawing, showing how rays of light and heat come to the earth.

REVIEW

1. How do we learn directions by the stars?
2. How do we learn directions by the sun?
3. How does a compass show directions?
4. What does a map show?
5. What is a relief map?
6. What is a plane map?
7. What is meant by the scale of a map?
8. What did people once believe about the form of the earth?
9. Tell the story of Columbus.
10. If there were people on the moon, how would the earth appear to them?
11. How does a ship sailing away on the ocean show that the earth is round?
12. What is gravity?
13. How much water is there on the earth?
14. What is there under the ocean?
15. How many continents are there?
16. What are the North Pole and the South Pole?
17. What is the equator?
18. Why cannot we see that the earth rotates?
19. Why does the sun seem to rise in the east?
20. What does the sun give us?
21. Where does the sun heat the earth most?
22. Why is it cold in the frigid regions?

NORTH AMERICA

13. The Mountains

We have learned that the continents were once at the bottom of the ocean, but later arose above the surface. The ridges that have risen highest have become ranges of mountains. There are usually several ranges of mountains near one another and these together make a mountain system. A large extent of elevated land with mountain ranges across it is called a highland. In North America there are highlands in the eastern and western parts. They are called the Eastern Highland and the Western Highland.

The system of mountains of the Eastern Highland is called the Appalachian System. The Western Highland is very broad. It covers most of the western part of North America. Its highest and longest mountain system is the Rocky Mountain System.

Mountains slowly become smaller, because particles of the rocks of which they are formed crumble away and are washed down into the valleys and lowlands. In some regions the mountains have been entirely worn away and the land where they once were is nearly level. This takes a very long time, but if a little is carried away from a mountain each year, in millions of years the whole mountain will be gone.

Some of the mountains in the eastern part of North America may have been as high, at some time in the past, as those in the western part, but they have been worn away much more than the mountains in the



Relief Map of North America

West. Some mountains of the Western Highland are nearly three miles high. This does not mean that they are nearly three miles higher than the lower land around them. When we give the height of mountains

we state how much higher they are than the level surface of the sea.

The lower land of North America, between the Eastern Highland and the Western Highland, is called the Great Central Plain. The region east of the Eastern Highland, that slopes toward the Atlantic Ocean, is called the Atlantic Slope. The land in the western part of the continent, that slopes toward the Pacific Ocean, is called the Pacific Slope.

The climate of mountains is cooler than that of lower land. The sun warms the surface of the earth and the nearer we are to it the warmer we are. If we should go up in a balloon in a warm day in summer,

we should gradually become cooler. If we could ascend far enough, we should find the air freezing cold.

It becomes cooler as we climb a mountain, as it becomes cooler when we travel north. In the southern part of North America it is very warm. Farther north it is generally cool and comfortable. Still farther north, in the frigid region, it is very cold. We could find a cool place sooner by climbing a mountain than by go-



Snow-capped Mountains

ing north because it becomes cool faster as we ascend the mountain.

In regions where it is warm enough on the lower land for orange trees to grow, halfway up the side of a mountain there may be no such trees, but other trees and plants that can thrive where it is colder. At the tops of high mountains it is so cold that no trees can live.

1. In what directions do the mountain ranges of the Eastern Highland extend?
2. In what directions do the ranges of the Western Highland extend?
3. Name the principal mountain ranges of North America.
4. Sketch a map of North America, showing the mountain ranges.

14. Shore Forms

The border between the ocean and the land is called the shore, or the coast. The coast is not generally very even or straight. By the map we see that it turns in and out in various directions. Wherever land reaches out into the water, it is because in these places the land is higher than the water and extends above it. In other places the water flows in over the lower land.

A point of land that reaches out into the ocean is called a cape, like Cape Cod. When land that extends out into the water is nearly surrounded by water, it is called a peninsula, like the peninsula of Florida. A narrow strip of land that connects two larger bodies of land is called an isthmus, like the Isthmus of Panama.

A part of the ocean that extends into the land, or is nearly surrounded by land, is called a sea, a bay, or a gulf, like the Caribbean Sea, Hudson Bay, and the Gulf



of Mexico. A passage from one body of water to another is called a strait, like Bering Strait.

Only the very large shore forms can be shown easily upon the map. There are many other smaller forms along the shore.

1. Name the three oceans around North America.
2. Give the names of the large peninsulas on the coast.
3. Name in order the seas, gulfs, and bays along the coast.
4. Name the large islands and groups of islands near North America.
5. Make an outline map of North America and write the names of the seas, gulfs, and bays that surround it.

15. Rivers

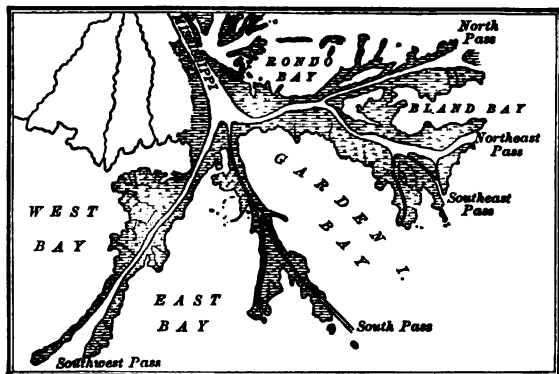
We know that streams always run in the direction in which the ground slopes. Sometimes we see water running where the ground seems to us level, but we should always find that it really slopes a little. We can tell the general slope of the land in any part of the country by noticing, on the map, in what direction the rivers flow. The map shows that the rivers of North America flow in many directions, and hence we know that the land slopes in many directions.

It is a mistake to think that going north means going up. We may go down hill in going north as often as in going south. Rivers generally run away from mountain ranges, because the land slopes on both sides. Where rivers seem, by the map, to run across mountain ranges they do not, of course, run over mountains, but in deep valleys between them.

The place where a river rises, or begins to flow, is called its *source*. The place where it flows into some other body of water is called its *mouth*. Several rivers

that flow together to make one larger river are called a *river system*. The greatest river system of North America is the Mississippi River System.

We have learned that particles of soil are carried along by running water. These are first carried into brooks, and then into the rivers. After a long time so much mud has been carried into wide rivers that meadows of level land have been formed along the banks.



The Delta of the Mississippi

Some of the soil or mud is carried at last to the mouths of the rivers, where they flow into the ocean or other bodies of water. Here they flow slowly and the mud sinks. This continues year after year until so much mud is heaped up that it reaches the surface of the water and forms land. Land so formed at the mouth of a river is called a delta. At the mouth of the Mississippi River there is a delta so large as to make thousands of acres of land.

1. Give the names of the largest rivers of North America. State in what direction and into what body of water each flows.
2. Why is the land along the banks of rivers usually level?
3. Would you expect to find rocks and gravel in the soil of a delta?
4. Why is the delta of the Mississippi River so large?

5. If brooks and rivers carry some mud into the ponds and lakes every year, what will at last become of the ponds and lakes?

6. Make a drawing of the Mississippi River and the rivers that flow into it, writing the name of each river.

16. The People

The explorers who discovered North America more than four hundred years ago found strange people living here. Although these explorers believed that the earth was round, they supposed it to be much smaller than it really is. They supposed they had sailed around as far as India, and they called the natives Indians. These Indians had a reddish brown color. Some of them painted their faces and other parts of their bodies. Some wore long feathers on their heads, short skirts, and leggings and shoes made of soft leather. They made very good bows and arrows and canoes. They roamed about from place to place, living mostly by hunting and fishing.

Since the Indians did not generally live by farming, and did not fell many trees to prepare land for crops, a large part of the country was covered with forests. Many of the Indians lived in the forests.

On the prairies and plains in the central part of the country there were few trees, but there was plenty of grass upon which large herds of buffaloes lived. The Indians killed many of these to obtain their meat for food and their skins for clothing and other purposes.

They lived mostly in tents, called wigwams. They had no schools for the children and no books to read. They lived in about the same way year after year, without learning anything new.

Different tribes often went to war and then they were very cruel. They often cut off the scalps of their enemies and wore these on their belts or hung them up in their wigwams. Such people are called savages.

After America had been discovered companies of people came from Europe and settled in various places. Those who came from England settled along the eastern coast of North America. One company settled at



Indian, Canoe, and Wigwam

Jamestown, Virginia. Their leader was Captain John Smith, whose name is connected with the story of the Indian girl Pocahontas. Another company, called the Pilgrims, settled at Plymouth, Massachusetts. Two of these Pilgrims were John Alden and Miles Standish.

At first the white settlers had a hard time. It was not easy for them to live as the Indians lived. It was necessary to cut down trees and prepare land for raising crops. They built rough houses of logs. Sometimes unfriendly Indians came upon them suddenly and murdered some of them. To guard against the Indians

they had to carry guns when they went to the fields, and even when they went to church.

More white settlers continued to come from England, and after a time they had cleared land for farms and made comfortable homes for a great distance along the



Log Houses of Early Settlers

eastern part of the country between the ocean and the mountains.

1. Why did not the Indians cut down trees and improve the land?
2. Why did they not make better houses?
3. Make a drawing of an Indian canoe, and one of a log house like those in which the white settlers lived.

17. The United States

The people from England who settled in America obtained the king's permission to do so, and each company of settlers was called a colony. After a time the people of the colonies began to dislike the way in which they were governed. They thought the king and his

officers were unjust to them and they refused to obey the unjust laws. The king sent soldiers to America, but the people of the colonies united and formed an army to fight against the English. In this war, which is called the Revolutionary War, the army of the colonies was led by George Washington. Washington and his army defeated the English and the king was obliged to let the colonists govern themselves.

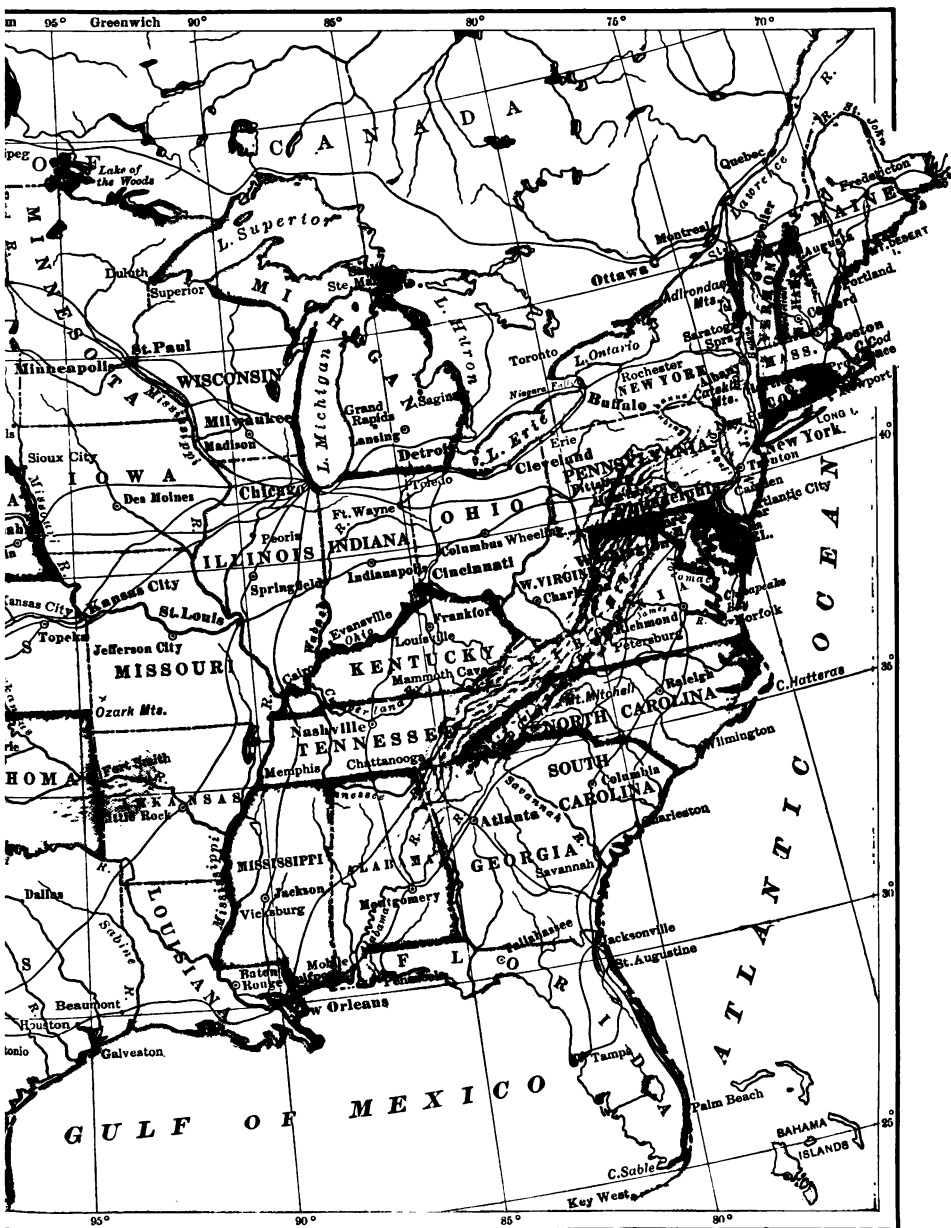
After this each of the colonies was called a state, and all the states were united in one nation called the United States. There had been thirteen colonies formed along the Atlantic coast and these became the first states. Maine and Vermont afterwards became states and the six states of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut were called the New England States, or New England.

Before the Revolutionary War the king of England claimed not only the land where the colonists lived, but also that beyond the mountains as far west as the Mississippi River. At the close of the war the king gave up all this country to the colonists.

Since there were not many white people living beyond the mountains and the land there did not belong to any state in particular, it was called public land. When many people had gone across the mountains and settled on the public land, new states were formed.

The United States afterwards obtained the country farther west, from the Mississippi River to the Pacific Ocean. As more people have gone to the West, new states have been formed, reaching entirely across the country.





1. Give the names of the first thirteen states, along the Atlantic coast, beginning with New Hampshire.
2. How many states are there now in the United States?
3. What state is in the extreme northeastern part of the country? In the extreme southwestern part?
4. Which state is farthest northwest? Farthest southeast?
5. What is the name of the largest state? Of the smallest state?
6. About how far is it across the United States from east to west?

18. Government

All people, wherever they are, must have some kind of government. Among all people there are some evil persons who would commit crimes if there were not laws or officers of government to prevent them or punish them. Besides this, if every one were left to do as he pleased, some necessary things would not be done at all. All the people must have roads to travel on, but no one alone would build the roads. The people must unite and arrange to build them. Schools must be provided for all children. When any person becomes so poor that he cannot get enough food and clothing, he must not be permitted to perish. The people in each township, county, or city choose officers to attend to these matters and to collect money to pay the expenses.

A group of towns, or townships, and cities together makes a state. There are some things that all the people of a state together can do better than each smaller division can do alone. There are too many people in a state for all to meet together, hence the people in each town, county, or city, vote for a few persons, who meet and attend to matters for all the people of the state. The city where they meet is called the capital city and the building in which they meet is called the state capitol.

Again, all the states must unite to do some things which the single states cannot do so well alone. For example, there must be money that will be good to use in every state in the country. The mail must be carried



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Hall of Representatives in the Capitol at Washington

everywhere, and when there is war with other countries, soldiers must be collected from all the states. A few persons are chosen from each state to attend to such matters as these. They are called senators and representatives and their meeting is called the Congress. They meet in the city of Washington, which is the capital city of the United States.

1. Would there probably be schools for all the children if the government did not provide any?

2. Do you think it is better for the neighbors to provide for poor people, or for the government to do it?

3. Why would it not be as well for the people in the different states to have different kinds of money?

4. Why is it better for the government to take care of the mail than for each state to do it?

REVIEW

1. How have mountain ranges been formed ?
2. What is a highland ?
3. What are the highlands of North America ?
4. What are the chief mountain systems of these highlands ?
5. How do mountains become smaller ?
6. Where is the Great Central Plain ?
7. Why is it cooler on mountains than on lower land ?
8. What is a cape ? A peninsula ? An isthmus ?
9. What is a sea, a gulf, or a bay ? A strait ?
10. How can we tell by a map in what directions land slopes ?
11. Do rivers that flow north flow *up* ?
12. What are the source and the mouth of a river ?
13. What is meant by the Mississippi River System ?
14. How do rivers form level land along their banks ?
15. How is a delta formed ?
16. Why were the natives of America called Indians ?
17. Tell about the customs of the Indians.
18. Tell about two settlements by white people on the Atlantic coast.
19. Tell about the hardships of these settlers.
20. What states are called the New England States ?
21. Give some reasons why we must have a government.
22. State some things which the government of the United States can do better than the governments of towns, cities, or states.

19. Agriculture

The business of raising cotton, wheat, corn, and other crops is called agriculture. Many people who live in cities have room enough in their gardens to raise a few flowers and vegetables. Many others, who live in the country on small farms, raise crops enough for their own use and some to sell to others.

In almost all parts of the country there are many small farms, but in some parts, where the land is nearly all good for farming and where some kinds of crops grow very well, there are very large farms. On these

many people are employed to do the work, and large crops are raised for market.

The agricultural sections of the United States, where the largest farm crops are raised, are in the southeastern part and in the central part.

Some farm crops will grow best where the climate is very warm, and others where it is cooler. Some plants



Nearly Every Farmer Raises Hay

will not grow well unless the soil is very moist, while others will grow best in drier soil. The farmers in each agricultural section learn which crops will thrive best in that section.

1. Why do we not plant flower seeds until the weather is very warm?
2. Why do farmers raise small crops in a season when there is a drought?
3. Why should you think that the southeastern part of the country and the central part would be the best regions for agriculture?
4. Write the names of ten states that are in the southeastern part of the country.
5. Write the names of ten states that are in the central part of the country.

20. Manufacturing

When a farmer wishes to build a house, if he has trees on his land he may chop them down and take the logs to a mill, to be sawed into boards and timber. After he has raised some wheat, he may take it to a mill and have it ground into flour for making bread. He could saw the logs into boards by hand at home, as the people of some countries do, and he could grind the wheat by



Old-fashioned Water Wheels

hand upon a stone, as the Indians used to grind corn; but this would take so long that he would have to work hard all the time and would always be very poor.

There are many kinds of work that can be done much more quickly and easily at mills than at home. The work done at mills is called manufacturing. Many mills are built by the sides of rivers where water runs down steep slopes or over waterfalls. Some of the water is turned aside where it will run against a water wheel. This makes the wheel turn rapidly, and since the wheel is fastened to a shaft, the shaft must turn also.

As the shaft turns, it sets in motion the machines that saw boards, grind wheat, and do other kinds of work.

In many mills machines are turned by steam, which is produced by burning coal, but where water power can be found, it is cheaper to use a water wheel. Some manufacturing is done by electricity, but the electricity must first be produced by water power or steam power.

Instead of taking wheat to a mill themselves, to have it ground into flour, farmers usually sell their wheat to



Where Cloth is Woven

men who buy large quantities and grind it at the mills, and then sell the flour both to farmers and to others who raise no wheat. So cotton and wool are bought by the owners of mills and manufactured into cloth. Hundreds of other articles are manufactured in the mills of the country.

1. Do you think a farmer would prefer to live on a farm near a river or at a long distance from one?

2. Why did the first settlers of the country build houses of logs, instead of using boards and timber?

3. Tell about any mills that you have seen.

4. Mention a number of kinds of work that can be done better at mills than at home.

21. Ships and Railroads

Crops that grow on farms, logs from trees that grow in forests, and other useful things that are obtained in different places, must usually be carried long distances. They must be carried to mills to be manufactured, and then articles that are made from them must be sent to places where people wish them for use.



Sailing Vessels and Steamboat

Before steamboats and steam engines were invented, goods were carried either in wagons or in sailing vessels. It is easy to carry goods in a sailing vessel. When the ship is loaded, it is necessary only to raise the sails and the wind will blow it along. A steamboat, however, usually goes faster than a sailing vessel. It can go all the time, whether the wind blows or not, and it can go up narrow rivers much better than a sailing vessel can.

It is more expensive to carry goods on railroad trains than on sailing vessels or steamboats, because it costs so much to make railroads, cars, and engines. But rail-

roads are much better than wagon roads for carrying goods and passengers, because trains go much faster than wagons. If goods had to be carried on wagons to places where they are wanted, many kinds would spoil on the way.



Railroad Freight Yards and Piers for Ships

When anything is to be taken a long distance, it may be carried by railroad trains to the nearest place to which vessels can come and then be loaded on a ship. This costs less than to send goods all the way by railroads.

Sometimes a canal is dug across the country from one body of water to another. The water fills the canal and then steamboats may pass through, or other boats may be drawn along by horses or mules that walk on the bank. Canal boats usually move slowly, but it costs less to carry goods on them than by railroads.



A Manufacturing City

1. Why is it difficult for a sailboat to go up or down a narrow river without the assistance of a tugboat?
2. Do you think it would be better for any one who has goods to send away to be near a river, where boats can come, or near a railroad?
3. When milk is sent a long distance to the city, is it better to send it on boats or on cars?
4. Name some articles that will not spoil in a long time.

22. Cities

Many people live on farms and raise crops to supply food and clothing for all the people, but many of the things that grow on the land must be manufactured in mills before they can be used. Wheat must be ground into flour; cotton must be manufactured into cloth; logs must be sawed into lumber.

To do all the work in mills a great many people are needed. Sometimes a thousand people or more work in a single mill. Since these people must have their homes near by, there are many houses near the mill. Wherever there is a large mill there will be a village. If there are many mills in the same place, there may be houses and people enough to make a city.



A Busy Street Scene

Whether things that are produced from the land need to be manufactured or not, many of them must be bought and sold and sent away to other people, because the farmers and others who produce them do not need them all for their own use. Men called merchants buy large quantities of such goods and have them sent to places where they are kept in storehouses until they are sold again and sent away to places where they are needed.

It takes many people to do all the business of buying and selling goods, and where there is much buying and selling there will be a town or a city. The business of buying and selling goods and sending them from one place to another is called *commerce*.

It is often true that many goods are bought and sold in the same places where goods are manufactured. In such places there are two reasons why there are people enough to make a city.

Of course, there are always many people in a town or city besides those who buy and sell and those who manufacture. There are doctors, and teachers, and policemen, and many others. Wherever there are many manufacturers and merchants, many others also find employment.

1. On the map of the United States see whether there are more cities near some water or at a distance from any water. What is the reason?
2. See whether there are many cities among mountains. Why?
3. Name some things produced on farms, that do not need to be manufactured.
4. Name as many things as you can that need to be manufactured.
5. Name as many city occupations as you can think of, besides buying and selling and manufacturing.
6. How many cities can you count that are built beside the Mississippi River and the rivers that flow into it?

23. Harbors

Many cities are built near water where ships can come and go to bring goods or carry them away. The water at such places must be so deep that the bottoms of the ships will not strike against the ground or rocks underneath. Some rivers are so shallow that large ships cannot sail into them very far from the ocean. For this reason cities are at the mouths of many rivers. Small boats, that do not sink very deep into the water, can then sail down the rivers to the cities and large ships can come in from the ocean to meet them.

A place where ships can come in from the ocean and remain safely is called a harbor. Ships cannot land at any point where they happen to be. The water might not be deep enough near the land, or they might strike against rocks. If the weather should be stormy, the

wind and waves might wreck them. They must keep away from shore until they come to a harbor, where they can ride safely at anchor or be tied up to a dock.

A ship can usually find a safe harbor by sailing a short distance up into a river. When it storms, the wind does not blow so hard in a river and the waves are not so high as on the ocean.



A Safe Harbor

There are some good harbors on the shore of the ocean, where points of land that reach out into the water prevent the waves from beating against ships.

In some places where no land extends out to protect ships, harbors are made by building large walls of rocks extending out from the land. Such walls are called breakwaters.

1. On the map of the United States find the names of some cities built beside rivers and not very far from the ocean.
2. Find the names of cities that seem to be built on the coast where there are no rivers.
3. Why must ocean vessels be so built as to sink deep into the water?
4. Sometimes dredging boats are seen digging up mud from under the water in a harbor. Why is this?

REVIEW

1. What is agriculture?
2. Where are the largest agricultural sections of the United States?
3. What is manufacturing?
4. Why are many mills built by the sides of rivers?
5. How does running water turn the machines of mills?
6. How is steam produced for running mills?
7. Name some articles that are manufactured at mills.
8. Why is it easy to carry goods in sailing vessels?
9. For what purpose are steamboats better than sailing vessels?
10. Why does it cost more to send goods on railroads than on steamboats?
11. Tell about canals.
12. Why are there towns or cities where there are many mills?
13. Give other reasons why there are so many people in a city.
14. What is commerce?
15. What is a harbor?
16. Why are many cities near the mouths of rivers?
17. Where may harbors be found on the shore of the ocean?

24. Cotton



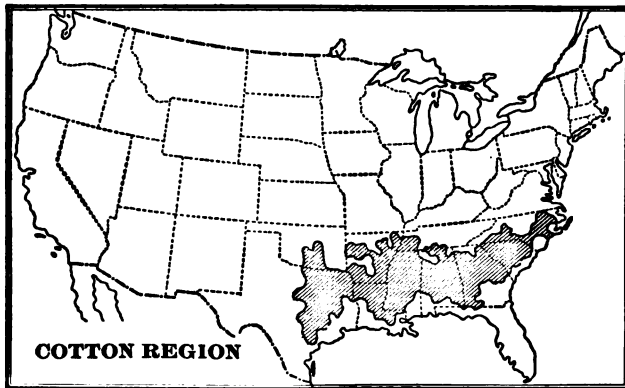
Cotton

A large part of the cloth that the people of the world use for clothing is made from cotton. The plant on which cotton grows needs good soil, a long, hot summer, and plenty of rain. In the southeastern part of the United States the summers are hot and moist and the cotton plant grows there better than anywhere else in the country.

The farmers who raise large fields of cotton are called planters and the farms are called plantations.

The cotton plant usually grows to a height of from two to four feet. It has white or reddish blossoms. A cotton plantation in blossom looks somewhat like a large field of beautiful roses. When the blossoms are gone, the seed pods, called bolls, grow larger and larger, and after a time burst and show bunches of soft, white cotton with seeds inside.

After some of the bolls in the cotton fields have become ripe, men, women, and children begin to pick the cotton. It takes a long time to gather the crop. The seeds are entangled in the fibers and have to be picked with the cotton.



From the fields the cotton is carried to places where the seeds are taken out by machines called cotton gins. Before the cotton gin was invented the seeds had to be picked out by hand, and it was very slow work. It would take a man all day to pick the seeds out of a single pound of cotton. One of the machines will now remove the seeds from thousands of pounds in a day.

After the seeds are removed the cotton is pressed tightly together in bales and sent away to market. The seeds used to be thrown away, but it has been found that a valuable oil can be pressed out of them. This is called cotton-seed oil. After the oil has been pressed out, the remaining part of the seed is used as food for farm animals or as fertilizer for the soil.



Picking Cotton

The markets where so much cotton is sold have become large cities. These are sometimes called cotton centers. Some of the large cotton centers are Galveston, New Orleans, Mobile, Savannah, Charleston, Wilmington, and Norfolk. You will notice that most of these cities are near the mouths of rivers. From the plantations that are near rivers the cotton is loaded on boats and taken down the rivers to the cities. Most of the rivers of this section are not very deep, hence the boats

are made shallow, and are called flatboats. Many large ships from the ocean come to the cotton centers and carry loads away.

Many cotton mills have been built in the South, but so much cotton is raised there that only a small part of it can be manufactured in these mills. Some is sent to England and other countries of Europe, and some to the mills in the north-



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Cotton Levee, New Orleans

eastern part of this country, especially to the New England States.

In New England the rivers that rise in the hills and mountains have many falls and rapids that furnish power for mills. New England people have been very skillful in building mills, making machines, and manufacturing many kinds of goods.

Some of the principal New England rivers that furnish water power are the Connecticut, the Merrimac, the Androscoggin, the Kennebec, and the Penobscot. Some of the chief cities where cotton is manufactured into cloth are Lowell, Lawrence, Manchester, Fall River, Providence, and New Bedford. More cotton cloth is made in Fall River than in any other city.

At Fall River and Providence there are small rivers that furnish some water power ; but besides the mills that use this power there are many in which the machines are run by steam power, because it is easy to send coal on ships to these cities for producing steam.



New England Cotton Mills

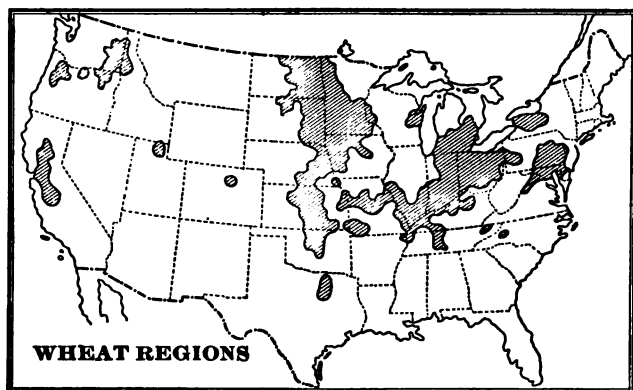
1. Name the states in which most cotton is raised.
2. Why will not cotton thrive in the northern part of the United States ?
3. Why is cotton pressed into bales before it is sent to market ?
4. Name some cotton centers that are near the mouths of rivers.
5. To what city is much of the cotton that is raised in Texas sent ?
6. To what city is that which grows in Arkansas probably sent ?
7. Make a map of the southeastern part of the United States, showing the cotton centers.

25. Wheat

The most common kind of food in this country, and in many other countries of the world, is bread. The most common kind of bread is made of flour, and flour is made of wheat.

Wheat is a kind of grass. Many kinds of grass have small seeds, but some kinds have large seeds filled with good food. Some of these, such as wheat, oats, barley, rye, and rice, are called grain. Bread might be made from any kind of grain, but most persons prefer wheat bread, or white bread as we call it.

The United States is one of the greatest wheat-raising countries in the world. This is chiefly because there is a large amount of land on which good crops of wheat can be raised easily.



Wheat thrives in a large region in the northern and central part of the United States. Much of the land there is called prairie land. In some places the prairie is almost as level as a floor. In other places there are low hills with easy slopes. On the prairies there are no forests, and before white settlers came to cultivate the land, tall grass grew there and furnished food for herds of buffaloes.

There are other smaller sections where great quantities of wheat are raised. These are chiefly in the western states near the Pacific Ocean.

When a farmer wishes to raise wheat, he first plows the ground. He does this partly to bury or destroy grass and weeds that may be growing upon the land. This is necessary, because grass and weeds would rob the soil of plant food that is needed by the wheat. Another purpose of plowing ground is to loosen it and permit air to pass into it, because such plants as wheat will not grow unless there is some air around their roots.



Harvesting Wheat

The farmer also harrows the ground to break the lumps into fine particles. This enables the tiny roots of the wheat plants to extend into the soil in all directions and find as much food as possible. Grains of wheat are then sown, either by hand or by machines, and there is no more work to be done till harvest time.

When a field of wheat ripens, it changes in color from green to golden yellow. It is then gathered with wonderful harvesting machines, which cut off the stalks and tie them in bundles, or cut off the heads from the stalks. The seeds, or grains, are separated by threshing machines, and the wheat is then ready for market.

One kind of wheat, called winter wheat, is sown in the autumn or winter and grows and ripens in the next summer. Another kind, called spring wheat, is sown in the spring.

Before bread can be made, wheat must be ground into flour. This is done in flour mills. The dark-colored part on the outside of the grains is removed in the mills and sold as feed for farm animals. The white



Courtesy of Washburn-Crosby Co.

Grinding Wheat in a Minneapolis Mill

part that remains is ground into very fine flour, put up in barrels or bags, and sold to flour merchants and then to grocers, from whom we buy it for our bread.

At Minneapolis there are falls in the Mississippi River, that furnish much water power, and a great amount of wheat is ground there. In that city are the largest flour mills in the world. In Chicago, and other cities that have no water power, wheat is ground by steam power produced with coal.

Only a part of the wheat, however, is ground into flour in the section of the country where it is raised. Much is sent to other parts of the United States and across the ocean to other countries.

From some cities on the shores of the Great Lakes, such as Chicago, Milwaukee, Duluth, and Superior, much wheat and flour are sent toward the east on ships and boats. Some of the wheat that is bought in cities is



A Grain Elevator

stored in tall buildings, called elevators. When it is to be sent away it runs in spouts from the elevators to the boats till these are loaded. There are also many elevators beside railroads, where cars are unloaded and loaded in a similar way.

Boats loaded with wheat pass from one of the Great Lakes to another. Where there are waterfalls along the rivers connecting the lakes, canals have been built. Wheat is thus carried through all the lakes to a port on the St. Lawrence River to which ocean vessels can come.

There is a canal, called the Erie Canal, through which goods are taken from Lake Erie across the state

of New York to the Hudson River and then down to New York City.

1. Give the names of several states in the central part of the country where much wheat is raised.
2. What three large rivers flow through these states?
3. In what states on the western coast is much wheat raised?
4. Why is so much wheat sent east by boats, instead of by cars?
5. Through what lakes would boats pass in going from Duluth to the St. Lawrence River?
6. At St. Paul farmers buy many things that they need to use in their wheat fields. Can you name some of these?
7. Make a map of the central wheat section and the Great Lakes, showing the principal cities.

26. Indian Corn

When the first white people came to America, they had never seen any Indian corn. They found that some of the Indians were raising it for food. The Indians called the plant maize, but in Europe wheat, rye, and other kinds of grain were called corn, and the settlers called this variety Indian corn. It really belongs to the same family of plants as wheat and other grain.

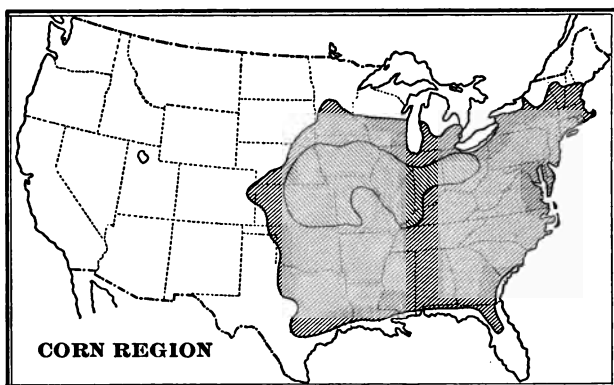
There are many different kinds of Indian corn. Some kinds are not more than four or five feet tall when ripe, but some kinds grow to a height of twelve or fifteen feet.

Corn grows best where the summers are very warm and there are frequent rains. The summers are warm in the northern part of the country, as well as in the



Indian Corn

southern part, but they are not so long in the northern part as in the southern part. Some kinds of corn grow much more slowly than other kinds. In the North those kinds are planted that will grow and ripen in a short summer. Farther south other kinds are raised that grow much larger and need a longer summer. By choosing the right varieties the farmers can raise corn over a large part of the country.



It is no wonder that the corn crop is our biggest crop. We produce the greater part of all that is raised in the world. In seven of our states more than one half of all the corn of the country is raised. They are Ohio, Indiana, Illinois, Iowa, Missouri, Kansas, and Nebraska. If you should travel through these states in the summer, the country would look almost like one vast corn field.

A field of growing corn is very interesting. Soon after the seeds are planted green blades spring up. In a few weeks leaves spread out and shade all the ground. After that come the tassels and silk, and then the ripening ears.

The leaves and stalks of the corn plant are generally used as food for cattle, but there is more rich food in the seeds. After corn has ripened the ears are gathered. When the corn is to be sent to distant markets or is to be ground into meal, it is first shelled from the cobs.

Some corn is used for the food of people. Everybody likes sweet corn and popcorn, if not corn bread also.



A Kansas Corn Crop

Corn is excellent food for all kinds of farm animals, and many farmers who raise it feed it to horses, cattle, sheep, pigs, or poultry. It is a kind of food that tends to make animals fat and is used to fatten animals before sending them to market. It does not cost so much to send away the beef, pork, or poultry as it would cost to send away the corn that the animals have eaten.

1. Name five large cities in the corn region.
2. In what different ways might corn be sent from Chicago to New York City?
3. Why do we ship more wheat than corn to Europe?

27. Sugar

The people of the United States use a great amount of sugar. If all the sugar that is used in the country in a year were divided equally among the men, women, and children, there would be more than seventy pounds for each one.



Where Maple Sugar is Made

Maple sugar is made from the sap of the sugar maple tree. Most of it comes from the northern part of New England, where the winters are cold. When the ground thaws in the first warm spring days, the sap begins to flow. Holes are bored in the trees, spouts are driven in, and the sap flows into buckets. Men and boys gather the sap, take it to the sap house, and make syrup or sugar by heating the sap enough to cause the water to evaporate from it.

Sugar is also made from the juice that is pressed out of the sugar beet. A very large amount of beet sugar is made in Europe, and more and more each year is made in the United States.

But much of the sugar made in this country has been made from sugar cane. This is a plant that looks somewhat like corn. It requires rich soil and grows only where the summers are very warm and long.

Most of our sugar cane grows in the state of Louisiana on land formed of the fine soil that has been brought down by the Mississippi River.



Cutting Sugar Cane in Louisiana

The cane grows very tall. When it is full grown, it is cut down and taken to a mill where the juice is pressed out by running the stalks between rollers. The juice is very sweet. It is composed of sugar and water, and some impurities. By heating and other processes in the mill the sugar is separated from the water.

When sugar is first obtained from the juice, it is brown, and is called raw sugar. Pure white sugar is produced by removing from raw sugar the matter that gives it the dark color. This is done at mills called refineries. Some sugar is refined at New Orleans, but there are refineries also in Boston, New York, Phila-

delphia, Baltimore, and San Francisco. Raw sugar is sent to these refineries from different parts of the United States and from other parts of the world.

Sugar cane grows well on some large islands in warm regions of the ocean. It thrives in the West Indies, and much raw sugar is sent from the city of Havana to American cities to be refined.

At San Francisco much sugar is refined. This comes from sugar beets raised in that part of the country and from sugar cane that is raised on islands in the Pacific Ocean.

1. Why is Louisiana a good state for raising sugar cane?
2. Why would it not grow well in Dakota?
3. Why cannot sugar cane enough be raised in this country to supply all the people with sugar?
4. On what waters would a ship sail in carrying a load of sugar from New Orleans to New York City?
5. From the scale of miles on the map find about how far a ship would sail in carrying a load of sugar from Havana to Philadelphia.

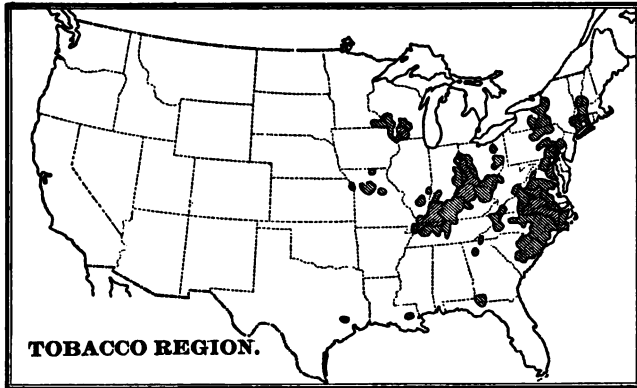


Tobacco

28. Tobacco

When the first white people came to America, they were surprised to see the Indians put leaves into pipes and smoke them. The leaves were those of a plant called tobacco. Before this time tobacco had not been known in other parts of the world, but the new settlers soon learned to use it. It is now used in every country of the world.

The tobacco plant grows tall during the warm summer and has large leaves. In the fall the leaves are dried and sent away to be manufactured. Some of the best leaves are rolled together to make cigars, some are pressed into plug tobacco, some are cut fine to make cigarettes and smoking tobacco, and some are ground into snuff.



Tobacco will not grow well in very large sections of the country. The right kind of soil for it and the right kind of weather are found only in certain places.

In this country, where tobacco was first discovered, there is more raised than in any other country of the world. A large amount is raised in Kentucky and Virginia. Louisville in Kentucky and Richmond in Virginia are large tobacco markets.

It would probably be better for the world if the Indians had never learned to use tobacco and had not taught other people to use it. It contains a poison called nicotine. This is injurious, especially to the young.

1. From the map, give the names of states in which a great amount of tobacco is raised.
2. Give the names of other states in which some tobacco is raised.
3. Can you give a reason why more is raised in the United States than in other countries?
4. On what waters would a boat sail in carrying a load of tobacco from Richmond to New York?
5. Make a drawing of a tobacco plant.

REVIEW

1. Where in the United States is most cotton found?
2. Describe the cotton plant.
3. What is a cotton gin?
4. What use is made of the seeds of cotton?
5. Name several large cotton centers.
6. Where is much of the cotton of the South sent?
7. Name the principal rivers of New England.
8. Name the principal cities in New England in which cotton is manufactured.
9. In what part of the United States is most wheat raised?
10. Describe the way in which wheat is raised.
11. Describe the making of flour from wheat.
12. Name some wheat centers on the shores of the Great Lakes.
13. How do boats pass from the Great Lakes to the St. Lawrence River and New York City?
14. Name the seven states in which most Indian corn is raised.
15. Describe how Indian corn is raised.
16. For what purpose is most Indian corn used?
17. Tell how maple sugar is made.
18. Where in our country does most sugar cane grow?
19. How is raw sugar made from sugar cane?
20. How is raw sugar changed to white sugar?
21. In what cities are sugar refineries to be found?
22. How did white people learn to use tobacco?
23. Explain how tobacco is raised.

29. Rainfall

The comfort and welfare of the people who live in different parts of the country depend very much upon the amount of rain that falls during the year. We must try to understand the reason why there is much more rain in some regions than in others.



Clouds

There is always water in the air. It is in the form of gas, or vapor, and we cannot see it, any more than we can see the air itself. Water vapor passes into the air from the surface of the ocean and other bodies of water and from the moist land.

The air can hold only a certain amount of moisture in such a way that we cannot see it. Whenever there is more moisture present than can be so held, we say there is a fog, or mist. When mist is high up in the air, we call it a cloud. When much moisture collects in the air, it forms drops of rain so heavy that they fall.

When air is warm, it can contain a large amount of water vapor and hold it so that we cannot see it, but when the same air becomes cooler, it cannot hold so much, and some will then form mist or rain. When the air in a warm room comes against a pane of glass, it is sometimes cooled so much that it leaves moisture on the glass. It is easy to think of many illustrations like this. Every one has seen drops of water on the outside of a pitcher of ice water on a warm day. Sometimes, when people who wear glasses go from the cold into a warm room, so much moisture forms on their glasses that they cannot see. When the ground becomes cool at night dew forms upon it, and when the air is cold enough there is frost instead of dew.

When fog, or clouds, or rain are formed in the air, it is because the air is becoming cooler. Rain falls when the air above contains much moisture and cannot hold it all because it is becoming cooler.



Snow Crystals

The air is usually cooled by moving about into cooler places. Wind is simply the air moving from one place to another. Sometimes air is cooled by moving along over the land to cooler places and some-

times by rising away from the earth to colder regions above.

When there is snow instead of rain, it is because the

air is cooled enough to freeze moisture into tiny ice crystals that cling together.

1. When roads and streets become dry after a rain, what has become of the moisture?
2. When wet clothes are dried, what becomes of the water that was in them?
3. Why can we sometimes see the breath of a person in a cold day?
4. What happens when fog fades away and we can see it no longer?
5. Make a copy of the picture of snow crystals.

30. Mountains and Arid Regions

When the wind blows across a range of mountains, the air is carried up into higher and colder regions above the mountain tops. If there is more moisture in the air than it can hold after it becomes colder, there will be rain on the mountains. After the air passes over the mountains and down to the warmer regions on the other side, it may be able to hold all its moisture.



There is usually much rain on mountains, but on the lower lands which the wind reaches after passing over mountains, there may be but little rain. The air leaves

so much on the mountains that it has little to spare for the country beyond.

In the western part of the United States the air that passes from the Pacific Ocean over the land is usually well filled with moisture that has been taken up from the ocean. Soon after it reaches the land it passes over mountains and loses much of its moisture in rain.

Large tracts of land lying between the first lofty range of mountains near the coast and the Rocky Mountains farther east have so little rain that scarcely any plants will grow upon them. These regions are called desert regions, or deserts, and that part of our country is sometimes called the Great American Desert.

In passing over other ranges of mountains farther east the air is often cooled enough to cause rain again. After it has passed beyond the Rocky Mountains to the Great Plains it has again become so dry that it is not often cooled enough to part with much moisture, and these regions are dry, or arid, during most of the year.

In much of the western part of our country there is not rain enough for trees and farm crops except in mountainous regions. Among some of the mountains there is so much rain and good soil that there are forests of large trees. Some of the largest trees in the world are found in that part of the country.

1. Name the leading ranges of mountains in the western part of the United States.

2. Through what states do the Rocky Mountains extend?

3. What mountain ranges are in California?

4. In what states are the Cascade Mountains?

5. What two large rivers flow through the western mountainous section?

6. Make a map of the western part of the country, showing the mountain ranges.

31. Irrigation

Farm crops, trees, and nearly all kinds of plants will grow well only when the soil is moist. In the arid regions of the west the soil generally has plenty of plant food, and crops would grow upon it if moisture were supplied. Since rain and snow fall upon the mountains of those regions, streams and rivers run down the sides of the mountains and across the lower land, but this water runs away without giving much moisture to the soil.



An Irrigation Canal in an Arid Region

In many places canals are dug from rivers to the land where water is needed, causing some of the water, instead of flowing on in the river, to flow away in the canals. Then smaller canals, or ditches, are made, extending from the large ones, and in these water runs to many different places. Sometimes large spouts, or flumes, are made instead of ditches. When a farmer, to whose land the water is brought, wishes to water his crops, he makes a way for the water to flow over his land and moisten it.

In some places large ponds of water are produced by building dams, and the water is kept until it is needed in the dry season.

Farmers whose land is watered by irrigation may always have their land moist enough to raise good crops. In other places, where the ground is moistened by rain, there may be too much rain at some times and at other times not rain enough.



Irrigated Land in California

There are many regions in the western part of the country, once only sandy deserts, where now the homes of prosperous farmers are everywhere to be seen. All this is due to the system of irrigation.

1. Why cannot crops grow unless the soil is moist?
2. Where does the water of the rivers of these dry regions come from?
3. Can that land be irrigated which slopes toward a river, or that which slopes away from a river?
4. Is it easier to irrigate land near mountains or far away from them?
5. Make a drawing of an imaginary river, with water flowing from it to irrigate a farm.

32. Grazing

In arid regions, where it is not easy to water land by irrigation, it may be moist enough for some grass to grow, although not moist enough for good farm crops. In a large section of our country, immediately east of the Rocky Mountains, the land is of this kind. This section reaches entirely across the country from Canada to the Gulf of Mexico and is called the Great Plains.



Herding Cattle on the Western Plains

Some kinds of grass grow over a large part of the Great Plains. There are a few houses, or huts, many miles apart. The men who live in these are called ranchmen and their business is called grazing. They have charge of large herds of cattle and sheep. The lives of these men and their families are often very lonely, with neighbors so far away.

Herds of sheep are watched by men and dogs. Men who care for cattle are called cowboys. They ride on horseback many miles, looking for the cattle and caring

for them. On some ranches there are no fences, and cattle belonging to different ranchmen mingle together, but each ranchman knows his own cattle by the marks that he places upon them.

Every spring the cowboys have what they call a "round-up." They drive the cattle together and catch



Sheep Ranch

the young calves and mark them by scorching them with a hot iron. This mark always remains upon them. In the fall there is another round-up, and then the fat steers are separated from the herd and sent to market.

Three of the large cities where live stock is bought and sold and from which meat is sent away are Chicago, Kansas City in Kansas, and Omaha.

1. Name the states through which the Great Plains extend.
2. Why are there not large cattle ranches in states farther east?
3. Why are the homes of ranchmen many miles apart?
4. Why are cattle on ranches fatter in the fall than in the spring?

33. Dairying

Cows furnish us milk, butter, and cheese. Cows which are raised for their milk must be kept on farms where people live, so that they may be milked regularly every day. The cows that are kept on the ranches of the Great Plains are not generally milked. There are only a few cowboys to care for a large number of cattle, and besides this, they would have no use for the milk.



A Dairy Farm

In the eastern part of the country, where cities and towns are numerous, much of the milk produced is sold by milkmen; but where there is more milk than is needed for this purpose, it is used to make butter and cheese.

A great amount of butter and cheese is made in the central and northern parts of the country. To make butter, the cream is separated from milk, either by machines called separators or by cooling the milk and letting it stand until the cream rises to the top. The cream is then stirred about in churns until the particles of fat stick together and form butter.

To make cheese, a liquid called rennet is put into milk. This causes the white matter in the milk to come together and form curd. The curd is then pressed into cheese.

In many places farmers avoid the work of making butter and cheese in small quantities at home by sending their milk to factories, where large quantities are made with less labor.



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A Modern Dairy-barn

Note the cleanliness.

1. Why is not so much butter or cheese usually made in the country near cities as at a distance from cities?

2. Why do not farmers usually send milk to cities, to be manufactured into butter, instead of sending butter?

3. Name some large cities to which the butter and cheese that is made in Pennsylvania would naturally be sent.

4. Through what states would a train be likely to pass in carrying a load of butter and cheese from Des Moines, Iowa, to New York City?

5. Name the states through which you think a train would pass in taking a load of butter from Madison, Wisconsin, to Baltimore.

34. Wool

The wool of sheep is used for making clothing, carpets, and other valuable articles. Some kinds of sheep grow large and fat and furnish meat that we call mutton, but usually such sheep produce but little wool. Most of

the sheep that are raised in the United States do not grow very large but have heavy fleeces of fine wool.

A few sheep are kept on the farms in the eastern part of the country. There are many in Ohio and other states in the central section. The largest herds are in the Western States, especially in the northern part of the dry, grazing section.

Once or twice a year the sheep are sheared and the wool is sent to market. It is afterwards bought and taken to mills, where it is manufactured. At the mills it is first washed clean

and then combed to straighten the fibers. The fibers are spun into yarn as the fibers of cotton are spun into thread. The yarn is then woven into cloth and other articles.

Cloth made of wool is softer and warmer than that which is made of cotton. It generally holds colors better than cotton cloth, and is considered more beautiful. Some cloth is made partly of wool and partly of cotton.

There are many woolen mills in the manufacturing



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Shearing Sheep

cities of the Eastern States. In some towns and cities there are both woolen mills and cotton mills.

Boston is a great center for wool trade. This is because it is the largest city of New England and because it is so near the New England cities in which much wool is manufactured.

Philadelphia is noted for the manufacture of fine woolen carpets. More carpets are manufactured in that city than in all other cities of the country.

1. Why is not wool that is raised on the ranches manufactured into cloth before it is sent away?
2. Why is so much wool sent to New England?
3. Name several manufacturing cities to which wool may be sent from Boston.
4. After wool is manufactured into cloth, in the cities of New England, what is probably done with the cloth?
5. In what direction would a train go in taking a load of wool from Cincinnati to Philadelphia?

35. Fruits

In almost every part of the country where there is rain enough, or where the land is irrigated, some kinds of fruit will grow, but each kind will grow well only in certain places, where there is the right kind of soil and the climate is not too warm or too cold.

In the northern part of the country not many kinds of fruit will thrive except apples, pears, plums, and berries. Farther south grapes, peaches, and some other fruits are raised. In some sections of the southern part, where the climate is warmest, such fruits as oranges and lemons will thrive.

A great amount of fruit is raised in the warm valleys in the southern part of California. The climate there

is dry in summer, but fruit trees are watered by irrigation. The soil is good and the climate is so mild that many varieties of fruit will thrive. Some of these are oranges, lemons, grapes, prunes, olives, and figs.

In that region there is seldom any rain in summer, and fruit will dry fast when left in the sunlight. After



A Prune Orchard in California

it is dried it may be sent anywhere and kept a long time without spoiling. Many grapes are dried for raisins. In the stores of almost any city, wherever we go, we find the dried prunes, apricots, pears, and peaches of Southern California.

Some oranges and pineapples are raised in the state of Florida. Some bananas are raised there, but most of our bananas come from the islands of the West Indies and from other countries farther south than the United States, where the climate is very warm and moist.

1. Why do not oranges grow in the northern part of the United States?
2. Why are not raisins produced in the state of New York, where many grapes are raised?
3. Through what states would a train pass in carrying fruit from Florida to the city of Washington?
4. About how far is fruit carried when it is sent from Southern California to Boston?

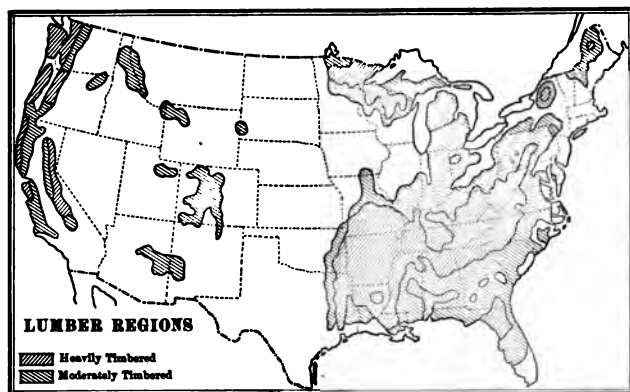
REVIEW

1. How does water pass into the air?
2. Why does water fall from the air in rain?
3. How is the air cooled?
4. Why does much rain fall on mountains?
5. Why does but little rain fall from air after it has passed over mountains?
6. Where are the arid regions of the United States?
7. Explain how land is watered by irrigation.
8. Where are the Great Plains?
9. Why are the arid regions largely used for grazing?
10. Tell about the work of ranchmen.
11. Name three cities which are centers of meat trade.
12. Why are not the cows on the large ranches used for dairying?
13. Where is the greater part of our butter and cheese made?
14. Explain how butter and cheese are made.
15. Where are the largest herds of sheep raised?
16. State how wool is manufactured into cloth.
17. Why is woolen cloth better for many purposes than cotton cloth?
18. What city is a great center for wool trade?
19. Where are many woolen carpets manufactured?
20. What kinds of fruit are raised in the northern part of the country?
21. Where are oranges and lemons raised?

36. Lumber

Many of our wants are supplied by wood and lumber from our forests. We depend partly upon wood for fires to keep us warm. Lumber is used in making our houses and furniture, and the carriages, cars, boats, and ships in which we ride.

It is not easy to see how we could live comfortably without a plentiful supply of the products of the forest, but there is danger that we shall cut down the trees and use them faster than others will grow. The officers of our government are doing all they can to persuade the people to take greater care of the forests and to plant many young trees, in order that there may always be enough to supply our wants.



There are many small forests where there is rain enough to make the trees grow. Many of these are on mountains and in hilly places where land has not been cleared for farming. But in some places large forests cover the level land as well as hills and mountains. There are very large forests in the northeastern part of the country, in the southeastern part, about the Great Lakes, and in the northwestern part.

Many kinds of trees grow in our forests. The wood of some kinds is called soft wood, because it is easy to cut, and that of other kinds is called hard wood. Soft

wood trees, such as white pine and spruce, furnish good timber and boards for building houses and making boxes. Soft wood is not very heavy and nails may easily be driven into it. Hard wood, such as maple and oak, is better for floors and for making furniture and other small articles, because it is stronger and more beautiful.

Trees in the forests are first felled and cut into logs. The logs are then taken to mills to be sawed into boards



Scene in the Timber Region

and thick timbers. The forests of large trees are usually far away from places where many people live, and often far from mills. Men who work in the forests go a long distance from home and take with them food enough to last a long time. They build huts of logs or boards, in which to eat and sleep, and other huts for the horses and oxen that draw the logs.

In the northern part of the country, where there is much snow, logs are usually drawn on sleds in winter. It is easy to draw them in that way. Roads in the

forest are rough, but when the snow comes it fills the low places and makes the roads smooth. Where there is no snow, tracks are sometimes laid in the forest and on these cars are run.

The mills are usually so far away that logs cannot be drawn to them. They are drawn, instead, to the bank of some stream or river. When the snow melts in the



Logs on the way to the Mill

spring, making the water run high and fast, the logs are rolled into the stream and float many miles down to the mills where they are sawed.

Most lumber mills are on the banks of rivers, where logs can be floated to them and where water power can be obtained. Some, however, are driven by steam power, and some small mills, called portable mills, are moved about from place to place. As soon as all the trees of one small forest have been sawed, the portable mill is moved to another place.

As logs float down the rivers they are stopped near

the mills where they are to be manufactured. Here they are sawed into timbers and boards, shingles for the roofs of buildings, clapboards to cover the walls, and into many other useful forms. The lumber is then carried away, to be used in cities and towns that have no timber forests near them.

Lumber mills are usually built near rivers or railroads. Lumber is heavy and can be sent most easily and cheaply by water to any cities that vessels can reach.

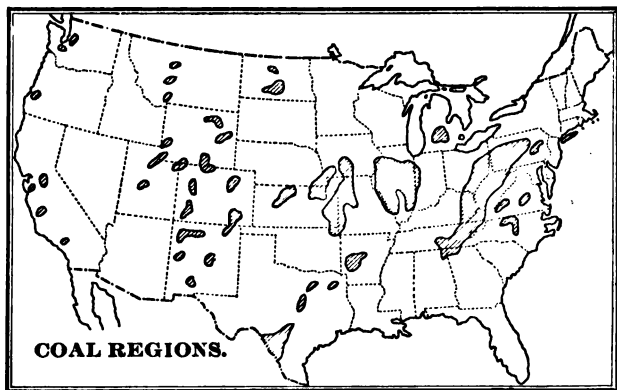
Some of the lumber centers for the forests in the northeastern part of the country are Bangor, Augusta, Lewiston, and Auburn. Much of the lumber from the region about the Great Lakes is sent to Minneapolis, Duluth, Superior, Chicago, Saginaw, and Grand Rapids. In the northwestern forest region Seattle and Tacoma are great lumber centers.

Some kinds of wood are used for making paper in paper mills. The wood is cut into chips and then soaked in acids and other substances until it is changed to a soft mass called pulp. The pulp is pressed between rollers and dried, and thus sheets of paper are made. Wrapping paper and newspaper are mostly made of wood.

1. Can you think of a reason why furniture and carriages are not made wholly of iron?
2. Would you expect to find large forests near large cities?
3. Which timber section of the country is nearest Boston?
4. Which timber section is nearest to Chicago? San Francisco?
5. Name five seaport cities in the southeastern section to which lumber may be sent.
6. To what cities on the Kennebec River may logs be floated?
7. In what state are Minneapolis and Duluth? Seattle and Tacoma? Saginaw and Grand Rapids?

37. Coal

Not all the useful things that we obtain from the earth grow upon its surface. Some of them we find in the soil and rocks below the surface. The most useful substance that we get out of the earth is coal. We can burn wood to heat our houses, to cook food, or to make steam for running machines ; but if there were nothing



else to burn, it would not be long before all the trees would be cut down. Coal, also, is more convenient than wood for many purposes. It takes but little coal to give the same heat as a large amount of wood.

Millions of years ago, before people lived on the earth, many trees and other plants grew and fell into marshy places. These were afterwards buried deeply and pressed together very hard. The result was that layers of coal were formed down deep in the ground. These layers or beds of coal were formed in many places and covered large sections of the country.

Many men work in the mines in the coal regions.

They are lowered in cars through deep shafts to the beds where coal is found. Lamps in their caps give light for their work. They mine the coal and load it upon cars, and these are drawn by mules to the shafts through which they are taken up to the surface by steam power.

One kind of coal, found largely in Pennsylvania, is



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In a Coal Mine

called hard coal, or anthracite. This makes but little smoke and is best for use in houses. The greater part of the coal of the country is soft and crumbles easily when taken from the mine. Hard coal is broken into pieces in mills called

breakers. It is then separated into assorted sizes. While this process is going on a large number of boys, called breaker boys, pick out any pieces of stone that they may find in the coal.

The miners live in small houses near the mines. They go down into the mines during their hours of work and return daily to their homes.

1. We sometimes find the prints of leaves and ferns on pieces of coal. What does this teach us?

2. How many coal fields can you count on the map of the United States?

3. Name several states in which there are large coal fields.

4. Name some states in which coal is not found.

5. Should you suppose that the price of coal would be higher in Maine or in Ohio?

6. Would the price be higher in Tennessee or in Florida?

7. Make a map of the country, shading the regions where most coal is found.



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Breaker Boys

38. Iron

We obtain many metals from the earth, such as iron, copper, gold, and silver. The most common and most useful of these is iron. It is found in mines, but in some places it is so near the surface that it is not very difficult to obtain it.

When first taken from the mines it is called iron ore. This is not pure iron, but is a mixture of iron and other substances. The pure iron must first be separated from these substances. This is done by heating ore very hot in large blast furnaces. Coke, that is made from coal, is used to heat the furnaces, because this will make a greater heat than coal. Iron ore is

poured into the top of a furnace, together with coke and some limestone. When the ore is melted, the pure iron, which is heaviest, sinks to the bottom of the furnace. It is drawn out through an opening and run into molds, in which it cools and hardens. It is then called pig iron.

Pig iron is the cheapest kind of iron and is used for making some heavy articles, such as stoves, but it is brittle and breaks if it receives a hard blow. By another



Blast Furnaces

process pig iron is changed to steel, and this is very firm and strong. In still other ways pig iron is changed to wrought iron or annealed iron, that will bend easily.

It requires so much coal to make coke for smelting iron ore in blast furnaces that it is fortunate when there are iron mines near coal mines. Then neither the coal nor the iron will need to be carried very far. Near the coal mines of Pennsylvania there are also mines of iron ore, and a great amount of iron is produced in that state.

Near the shore of Lake Superior there are rich mines of iron ore. There are no coal mines very near, but the ore is carried in vessels across the Great Lakes, at little expense, to Chicago and to cities on the southern shore of Lake Erie. Coal mines not far from these cities furnish coal for coke that is used in smelting the ore.



Casting Pig Iron

1. In what states are the iron mines near Lake Superior?
2. Name some articles that you think are made of iron.
3. Name some that you think are made of steel.
4. Can you think of a reason why many heavy articles are made from iron and steel in Philadelphia?
5. What cities are there on the southern shore of Lake Erie to which iron ore may be carried?
6. In what states are these cities?

39. Gold

Before the year 1848 only a few white people lived in the western part of the United States, and but little was known about that region. In that year a man in

California noticed particles of gold in the gravel of a river valley. The news spread rapidly and soon thousands of the people of the East were traveling to California. At that time there were no railroads across the country. Some of the people sailed entirely around South America. Others sailed to the narrow Isthmus



San Francisco Bay

of Panama, that connects North America and South America, crossed the isthmus, and sailed again from the other side.

The best harbor along the western coast was in the bay at San Francisco, and so many people went there that the town grew rapidly and afterwards became a city.

Many people are willing to travel long distances and endure great hardships if they think they can get gold, because it is so valuable. The finest articles are made of it. It never rusts and is easily kept bright and beautiful. It is used for money because it takes but little of it to be worth a large sum, and it is easier to carry large sums of gold than to carry money made of other metals. Its value also changes but little.

Since gold was first discovered in California, many mines of gold, silver, copper, lead, and other useful metals have been discovered in the mountains of the Western States.

Not many years ago gold was discovered in Alaska. This is a large territory that belongs to the United



A Colorado Gold Mine

States. It is a cold country to live in, but many people go there to get gold. Some remain there during the long, cold winter, but many others go by steamboats from the city of Seattle in the spring and return in the fall. Some go by boat to the coast of Alaska and then journey across country by a railroad to the gold mines of the Klondike region. Others take the boats which go farther north and up the Yukon River.

In some places there are particles of gold mixed in the rock of the mountains. As particles of the rock have crumbled off, during thousands of years, and have been carried down by rains and streams to the valleys, the

particles of gold have also been carried along. In such places the sand and gravel that the streams have carried down may contain yellow particles of gold.

Those who are looking for gold usually find it in the sand and gravel before they find the rock from which it came. The particles of gold are so very heavy that



One Way of Gold Mining

when water is poured upon a pan filled with the sand, they will settle to the bottom and so can be separated. Sometimes a large stream is poured through a hose upon a bank of sand and gravel, and this washes out the gold much faster.

After gold has been discovered in the sand so many people go to get it that it is soon gone. Search is afterwards made in the mountains for the rock from which the gold came. From the rock it is not so easy to get the gold. The rock must first be broken into pieces and then crushed into small particles in strong mills.

Often silver and gold are found in the same rock, and often rock containing gold and other rock containing silver are found near each other.

It takes so many people to do the work of mining that near large mines villages, and even cities, spring up. There are many valuable mines in California, Colorado, and several other Western States.



Mill for crushing Gold-bearing Rock

Much gold and silver are used for manufacturing jewelry and other articles in some of the cities of the East. Some is sent to the government mints at San Francisco, Philadelphia, and New Orleans, where it is pressed into coins.

1. Why did many of the people, who first went to California to find gold, sail around, instead of going across the country?
2. Why do miners look for gold in the rock of the mountains near the places where they find it in the sand?
3. Can you think of a reason why a stream does not carry particles of gold very far away from the mountains?
4. Why do those who go to Alaska start from Seattle?
5. In what states are the cities that have United States mints?

40. Building Stones

The solid rock under the soil and in the mountains is of different kinds. The most common of these are granite, sandstone, limestone, and marble.

Stone is used for making buildings, monuments, paving stones, and many other things.



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A Granite Quarry

One of the most useful kinds of stone is granite. It is hard and can be split into pieces of regular form. Granite is usually deep in the earth, with layers of other stone upon it. In places where the crust of the earth has been wrinkled up in hills and moun-

tains the granite has been raised, together with all the other kinds of stone. After a long time the other kinds have been worn away, and we are able to get the granite.

A place where useful stone is obtained is called a quarry. There are many granite quarries in the north-eastern part of the country, where the mountains are very old and have been mostly worn away.

Granite is heavy and expensive to carry a long distance, but when there is a quarry near a city, granite is taken from it for many of the buildings. When a quarry is near a river or the seacoast, granite can be loaded on ships and sent to cities far away.

There are many quarries along the coast of Maine. Blocks of granite are there loaded on vessels and sent to New York, Philadelphia, Washington, and other cities.

Most of the sandstone which is used for buildings is found in the states of New York, Connecticut, Pennsylvania, and Ohio. Some buildings are made of limestone. A large amount of this is found in Indiana. Many monuments and statues and some buildings are made of marble. This stone is so soft that it is easily sawed into pieces at the quarries. The most noted marble quarries of the country are in Vermont and Georgia.

1. Nearly all of Mount Washington, in New Hampshire, is composed of granite. Why is not much of it used?
2. About how far would a ship sail in carrying a load of granite from the mouth of the Penobscot River to Baltimore?
3. Name many different purposes for which granite is used.
4. Name different kinds of articles that are made of marble.
5. Do you know of another purpose for which limestone is used besides that of making buildings?

41. Fishing

A large amount of food for the people of the world is obtained from fish. Some fish are found in brooks, rivers, ponds, and lakes, but a far greater number live in the ocean. Some of the most useful kinds are codfish, salmon, herring, and shad. Codfish are the most abundant and useful of all.

Many codfish live in the northern part of the Atlantic Ocean, where the water is cool. When they are ready to spawn, or lay their eggs, they come near the shore to leave the eggs in shallow water, because the young fishes, when they are hatched, can live better there.

Codfish are caught along the shore of New England and in the shallow water near the island of Newfoundland. This part of the ocean is called the Grand Banks.



Fleet of Fishing Boats at a Wharf

Many fishermen go from the United States to the Grand Banks to get codfish.

Some of the fish are kept on ice, and sold to be eaten while fresh, but most of them are salted and dried in order that they may be kept a long time without spoiling. The fishermen usually carry their fish to some place on the shore, where they split and clean them. Then they salt and dry them in the sun and tie them together in bundles. These are then carried to some city to be sold and sent to all parts of the country.

Gloucester, on the coast of Massachusetts, is the home of many fishermen who go a long distance to get codfish.

Shad are taken in nets as they swim up rivers to lay their eggs. Many of them are caught in the Connecticut River, the Hudson River, and the Kennebec River. Many more are caught in the rivers that flow into Chesapeake Bay. Salmon also are caught as they swim up the rivers. The greatest number are found in the Columbia River, and most of these are canned before they are sent to market.



A Catch of Columbia River Salmon

1. How many kinds of fish can you name, that live in brooks, rivers, ponds, or lakes?
2. How many kinds can you name that live in the ocean?
3. Why are so many fish salted, instead of being sold to be eaten fresh?
4. Name the states through which those rivers flow in which many shad are caught.
5. Where is the Columbia River?

REVIEW

1. Name some uses of lumber.
2. In what parts of the United States are the largest forest regions?
3. Describe the work of lumbermen in the forests.
4. Why are logs drawn to a stream or river?

5. Why are most lumber mills on the banks of rivers?
6. Name some lumber centers in each of the great forest regions of the country.
7. How is paper made from wood?
8. How was coal formed?
9. Explain how coal is obtained from mines.
10. Explain the difference between hard coal and soft coal.
11. How is iron made from iron ore?
12. What is pig iron?
13. Why are those iron mines most valuable that are near coal mines?
14. In what two regions is much iron ore obtained?
15. In what part of the country is much gold found?
16. Why is much gold used for money?
17. Where did the gold come from which is found in sand?
18. How is gold obtained from rock?
19. What are the most common kinds of building stones?
20. Why are there more granite quarries in the northeastern part of the country than elsewhere?
21. Why is a granite quarry more valuable if it is near a harbor than if it is at a distance from the water?
22. In what states is much sandstone obtained for buildings?
23. In what states are the most valuable marble quarries?
24. Where are most of our codfish obtained?
25. Tell about the Grand Banks.
26. How do fishermen prepare codfish for market?

42. New York City

New York is the largest city in the United States. The only city in the world that is larger is London, in England. There are several reasons why so many people live in a city like New York. It has a good harbor, in which the water is deep, and there is room enough for many large ships from all parts of the world to come and go with goods and passengers.

Many railroads have been built to New York from north, south, and west, connecting with ocean vessels

in the harbor. By going up the Hudson River and through the Erie Canal, boats from New York can reach Lake Erie, and there meet other boats which go to the cities on the Great Lakes.

Many merchants are needed to buy and sell all the goods that are sent to such a great trading center from different parts of our own country and from other countries. Some of the goods are manufactured in



A View in New York City

shops and mills before they are sent away, and to do the work in these mills many more people are needed.

Many of the buildings are very high, in order to make room for keeping the goods that are bought and sold, and to provide offices for the people who do business. If the buildings were not tall, it would take so many of them that some would have to be built far away from the harbor and the railway stations.

Besides the buildings where the goods are kept and where business is done, there must, of course, be a great number of houses to make homes for all the families. These houses do not need to be very high, because they can be built farther away from the center of the city.

We know that in any large city there are thousands of people besides those who buy and sell goods or work in mills. Their work is to supply the various wants of the people in the city. Some people, also, who have no special occupation prefer to live in a great city, because of the advantages of city life.



One of the Great Bridges in New York City

Many men who do business in New York have homes in the suburbs, several miles from the city. By the electric cars they can go very quickly from their homes to their business offices. Cars pass through tunnels under the beds of the rivers and carry passengers from one side to the other in a much shorter time than it would take to cross in boats.

But there are thousands of poor people who are not able to have homes in the suburbs. They live in large buildings that stand close together on crowded streets. The home of a family may be simply one or two rooms, with many other families in the same building.

1. Why are many railroads built to cities on the coast?

2. Why did New York increase in size much faster after the Erie Canal was built?
3. Why have many of the houses in New York no yards or lawns?
4. Why do some children in New York play on the roofs of their houses?



43. Chicago

Chicago is larger than any other city in the country except New York. Like New York, it has grown very large because it has a favorable location. Goods can be brought to it easily to be bought and sold or manufactured. Large ships from the ocean cannot reach Chicago, but lake boats and canal boats take goods to New York, and also to Montreal on the St. Lawrence River, where they are loaded on large ocean vessels.

Many of the railroads that lead from the country west of the Great Lakes to New York, Boston, and other eastern cities pass south of Lake Michigan, and

naturally go through Chicago. Many other railroads have been built to this city. It is the great trading center for the farmers, the ranchmen, and the lumbermen of the central part of the country.



The Chicago Stock Yards

Some of the grain that is brought to Chicago from the great wheatfields and cornfields is kept for a time in elevators, and is then loaded on cars and boats and sent to cities farther east, or to foreign countries.

The lumber that is brought from the forests around the Great Lakes is piled in great lumber yards. Some of it is manufactured into articles of many kinds, and some is sent away.

Great numbers of cattle, swine, and sheep are sent to Chicago from the farms and ranches. The yards in which the animals are kept for a short time, until they are sold or slaughtered, are called the Stock Yards.

Some of the animals are slaughtered at the Stock Yards and the meat is sent away in refrigerator cars, but some are sent alive to eastern cities, and even on steamships across the ocean to Europe.

1. Name some of the states from which wheat is sent to Chicago.
2. Name the lakes through which a boat would pass, with a load of wheat from Chicago, before reaching the Erie Canal at Buffalo.
3. From what states does lumber probably come to Chicago?
4. From what region is iron ore sent to that city?

44. The Mountains

There are many interesting places in the United States besides the farms, forests, mines, and cities. All these mean work, and everybody who can, should have work to do, but we all need play or récreation as well.

All large cities have playgrounds and parks where grass, flowers, trees, lakes, and animals can be seen. In the country, also, there are interesting places and pleasure resorts.

Many people enjoy going to the mountains, particularly in the summer time. This is partly because the scenery is so beautiful. Where the land is level we cannot see much of it at one time, but from the mountains we see far away. It is much cooler on mountains than on lower, level land. It is not so dry and dusty there as on the land below, because it rains more on the mountains, and the shade of trees prevents the sun from drying the ground so quickly.

In summer thousands go to the mountains and live in hotels, cottages, or tents. They find enjoyment in hunting and fishing, and in riding or climbing to high places where they can see far over the beautiful country.

There are many mountains to which the people of the western part of the country may go. In the East the White Mountains and the Adirondack Mountains are popular summer resorts.

Some mountains are called volcanoes. These have been formed in a very wonderful way. Deep down below the surface of the ground the earth is very hot. In places rocks and other substances are melted. Where there are volcanoes some of the melted matter, called



A Volcano in Eruption

lava, comes up to the surface of the earth.

When a quantity of lava is pushed up through an opening to the surface of the ground and cools,

it becomes solid, as melted iron becomes solid in cooling. Afterwards more lava comes up through the same opening and cools above the first. Little by little a great mass of lava is piled up, with an opening at the top, called a crater, through which the lava comes.

It often happens that water among the rocks in the earth below a volcano becomes so hot that it is changed to steam, and this makes a sudden explosion that throws great clouds of steam high into the air. Sometimes lava, also, is thrown into the air by such explosions, and the cooled and hardened pieces come pouring down upon the ground for miles around.

Such an explosion or overflow of lava is called an

eruption. Sometimes so much lava comes from a volcano in an eruption that it flows down the sides and across the country, covering and destroying everything for a long distance.

In some foreign countries there are volcanoes which have frequent eruptions. Some of the high mountain peaks of our Western States are old volcanoes that have ceased to be active. The last eruption in this country came from Mount Shasta, in the northern part of California.

1. Why is there usually more rain on mountains than on lowlands?
2. In what states are the White Mountains and the Adirondack Mountains?
3. Name some mountain peaks in Colorado; California; Washington and Oregon.
4. Name all the states in the eastern part of the country through which mountains extend.

45. The Seashore

In the hot weather of summer we enjoy going to the seashore. It is pleasant to look over the broad ocean and watch the waves and the ships. It is good sport to go out in a small boat for a sail or to catch fish. It is also pleasant and healthful to bathe in the ocean.

It is easier to swim in the ocean than in a pond or a river, because ocean water is salt, and salt water bears us up more than fresh water. Brooks and rivers, as they flow through the land, dissolve a little salt out of the soil and carry it along to the sea. There is so little salt in river water that we do not notice it, and we call the water fresh; but in thousands of years the little

salt that all the rivers are carrying to the sea amounts to a great deal and makes sea water taste very salt. After salt once gets into the sea, it remains there. When the water passes into the air by evaporation and is carried over the land, the salt is left behind.

We find the seashore cooler in summer than places inland. The sun heats the streets and sidewalks in cities



The Waves at Sea

and the top of the ground everywhere, and this makes the land very warm. When the water on the surface of the ocean becomes warmer, the waves mingle it with the cool water underneath, so that the surface water is never very warm. This makes the air over the water cool, and cool breezes blow toward the land.

In winter the ocean cools very slowly, because as surface water becomes colder it mingles with the warmer water underneath. The surface of the ocean remains warmer in winter than the surface of the land, and the weather is generally not so cold in winter by the seashore as at a distance from the sea. But the wind is

often more violent by the seashore, because there is nothing to check its force, as hills and trees check the force of wind on the land.

A seashore resort is usually a place where there is a sandy beach. Most cities along the coast have bathing beaches near, to which thousands of people go on hot



A Bathing Beach

summer days. Along the coast of New Jersey there is a sandy beach for many miles. Out on sandy islands, at a little distance from the shore, there are hotels enough to make a city. It is called Atlantic City. A famous beach on the Pacific coast is Coronado Beach, near the city of San Diego.

1. In what three ways can we find a place where it is cooler in summer?
2. Should you expect to find it cooler beside a large lake in summer, than at a distance from the lake?
3. Is it nearer for people in Ohio to go to the seashore on the western coast, or on the eastern coast?
4. In what state is San Diego?
5. If you should leave some sea water in a dish and let it dry away, what should you expect to find remaining in the dish?

46. The Yellowstone National Park

As cities have their parks, so the whole country has national parks. Some land in the country is still public land. It belongs to the government, and not to any particular persons. In several interesting places the government has set apart public land as pleasure resorts, or parks. The largest and most interesting of the national parks is the Yellowstone National Park.

The Yellowstone River, which flows through the Park, falls over a precipice that is more than three hundred



A Geyser

feet high. The most wonderful sights are the hot springs, or geysers. Through openings in the ground steaming hot water now and then spurts high up into the air, making a great fountain of spray. One of the geysers, called "Old Faithful," throws up a column of water regularly every sixty-five minutes.

It is supposed that streams of water beneath the surface of the ground run down to deep places where the rocks are very hot. After the water is heated, steam comes up through the openings with an explosion, and throws water up with it.

The hot water dissolves mineral matter from the rocks and brings it up into the air. When the water falls upon the ground and cools, some of this mineral matter collects on the ground. In a long time masses of matter with beautiful colors are built up around the geysers.

In the forests of the Park bears and other wild animals have their freedom. Government soldiers, who take care of the Park, prevent hunters from harming them.

1. What states surround the Yellowstone Park?
2. This park is about as large as the state of Connecticut. How long is Connecticut?
3. About how many states as large as Connecticut would it take to make a state as large as Wyoming?
4. About how far is Yellowstone Park from Portland, Oregon?
5. About how far is it from New York City?

REVIEW

1. How does a good harbor help to make a large city?
2. How has the Erie Canal made New York City larger?
3. What other kind of business, besides commerce, is carried on largely in New York City?
4. Why are many of the buildings in New York so high?
5. How can people go quickly from their homes to their business in New York?
6. How can goods be sent to Chicago easily from the country near the Great Lakes?
7. How can goods be sent by boats from Chicago to the ocean?
8. Name several articles for which Chicago is a great trading center.



The Falls of the Yellowstone

9. Give reasons why people go to the mountains in summer.
10. Name mountains which are popular summer resorts.
11. Explain how volcanoes have been formed.
12. Where in this country are some old volcanoes?
13. Why is it easier to swim in the ocean than in a river?
14. What has caused the ocean water to be salt?
15. Why is it cooler in summer at the seashore than at a distance from the sea?
16. Name some popular seashore resorts.
17. Where is the Yellowstone National Park?
18. For what purpose is the Yellowstone Park kept?
19. Explain the action of geysers.

47. Canada

North of the United States is the country called Canada. The farther north we go, the colder it becomes, but in the southern part of Canada it is not much colder than in the northern part of the United States. Indeed, the extreme southern part of Canada is not so far north as some parts of the United States. Many of the same crops grow there as in our own country, and the people live in about the same way.

On the broad plains of the southern and western parts of Canada large crops of wheat are raised, and in some of the regions near the Rocky Mountains there are many herds of cattle and sheep.

Farther north a vast forest region stretches across the country. Still farther north it is too cold for even trees to grow, and the ground is covered with snow and ice during most of the year.

Many years ago French people came across the ocean, sailed up the St. Lawrence River, and settled there. Afterwards the English conquered the French and took possession of the country, but the descendants of the

French, who still live in Canada, speak the French language.

Most of the people of Canada are English. They have



Montreal from Mount Royal

not become independent of Great Britain, like the people of the United States. They belong to the British Empire, but they govern themselves almost as much as if they were independent. They have several provinces, as we have states, and their capital city is Ottawa.

The St. Lawrence is the great river of Canada. It is so deep that ships can sail a thousand miles up from the ocean to Montreal. To this city boats bring goods from the Great Lakes. Railroads from Montreal extend entirely across the country to the Pacific Ocean.

In the forest regions of Canada there are very few people except Indians. These Indians live in huts made of poles and covered with the skins of animals or with brush and snow. Many fur-bearing animals live in the forests. Their fur prevents them from suffering with cold in the severe winters. The Indians wear the skins of animals for clothing.

They also kill many animals, such as the fox, beaver, otter, mink, and marten, and sell the skins to the white people, who have stations here and there, where they meet the Indians and trade with them.



A Dog Team carrying Furs

The Indians have to travel long distances on foot through the woods, and paddle across rivers and lakes in canoes. When there is snow they walk upon broad snowshoes. They carry their furs to the trading stations on sledges drawn by dogs, and exchange them for things that they need. The white traders then send the furs to cities farther south, or to Europe, where they are manufactured into muffs, collars, and other articles of clothing.

1. What large bay is in the eastern part of Canada?
2. In what part of Canada are the cities of Halifax and St. John?
3. Name two cities that are not very far from Montreal.
4. Where is Vancouver?
5. Name several cities on the shores of the Great Lakes, from which boats may go to Montreal.
6. Name as many articles as you can that are made of fur.

48. Seals and Whales

In the cold water, near the coast of the northwestern part of North America, there are many seals. The skins of these animals are covered with very fine, warm fur.

The seals swim about in the ocean and climb upon blocks of floating ice. In the spring many of them climb upon a group of islands called the Pribilof Islands. A company of men are permitted by the United States government each year

to go to these islands and kill a certain number of seals. Guards are stationed on the islands to prevent others from killing them. The skins are shipped



A Family of Seals in Alaska

to San Francisco, and many are afterwards sent to Europe, where they are prepared for clothing.

In the cold water of the Atlantic Ocean, on the other side of North America, there are seals of another kind. The fur of these is not very good, but their skins are used for leather, and their bodies contain much fat, or blubber, from which oil is made. Sailors find these seals floating on blocks of ice, and kill many of them and carry away the skins and blubber.

There are also valuable whales in the cold water of the ocean far to the north. The most are found in the Arctic Ocean and in the waters near it, although some kinds are found in warmer waters farther south.

Whales are the largest animals that live in the ocean. Some are more than one hundred feet long. They do not stay all the time under water, like fish, but sometimes come to the surface to breathe air, like animals that live on land. When they come up to breathe, they spurt streams of water vapor high up into the air. Then the sailors, who are watching for them, steer their boats near and shoot harpoons into them.



A Norway Whale

A great amount of oil is produced from the blubber cut from the bodies of these whales. From the mouths of some of them a substance called whalebone is obtained. It is used for making whips and other articles.

The sailors who make voyages in search of whales have a dangerous life. Besides the danger of injury from the whales, there is also fear that floating ice may close round the ships and crush them, or prevent them from returning south before the colder weather comes, when they will be frozen in.

1. In what different ways could sealskins be sent from San Francisco to Europe?
2. Through what strait do vessels pass in going from the Pacific Ocean to the Arctic Ocean?
3. Through what strait do ships pass in going to Baffin Bay?

49. Eskimos

Most of the people who lived in America before the white people came were Indians, but in the very cold regions of the far north there were other people called Eskimos. The Eskimos are short people with coarse black hair. They live along the coast of the northern part of Canada, on the islands near, and on the coast of Greenland, east of Canada.

The country of the Eskimos is so cold during the long winter that they sometimes have a very hard time to keep warm and get enough to eat. Snow or ice covers most of the ground in summer as well as winter. Their food is almost wholly the flesh of fish, birds, seals, caribous, and some other animals. Their clothing is made of the skins of animals. They live near the ocean, because they can find more food in the ocean than on the land.



Greenland Eskimos

In summer the Eskimos live in tents made of skins spread over poles. They take their tents with them wherever they go in search of food. For the cold winter they build warmer huts and cover them with snow.

In winter, when the sea is mostly covered with snow and ice, the Eskimos ride about on sledges drawn by dogs. But in summer, when the ice of the sea breaks

up and floats away, they go out upon the water in their canoes, which are called kayaks. They paddle about and kill seals, fish, and birds, with their spears.

When white fishermen from the United States and Canada go to the coast of Labrador, the Eskimos trade with them, buying articles of food and clothing.



Eskimo Village

Greenland belongs to Denmark, a country of Europe. Ships come from Denmark every summer, loaded with supplies that are exchanged for skins, blubber, and other articles that the Eskimos have to sell. The people of Denmark also try to help the Eskimos by teaching them how to build houses and live more comfortably.



Eskimo Fishing in a Kayak

1. Why do the Eskimos move about, instead of living in the same places?
2. Why do they not build more houses of boards and timbers?
3. About how much farther north is Greenland than Newfoundland?
4. What bay lies between Greenland and Canada?

50. Mexico

South of the United States is Mexico. As we go south, the weather grows warmer, because there the sun is more nearly overhead at midday. If the land of Mexico were all low and level, that country would be very warm, but there are mountain ranges with plateaus between them. In these high regions the climate is as cool as in the United States, and nearly the same kinds of crops are raised as in our country. But on the lowlands near the coast it is very warm, and there we should see palms, coffee trees, banana trees, and other tropical plants.

As the English people crossed the ocean and settled in the United States, so the Spanish people came to Mexico. The English came to the New World to stay and make homes for themselves, but most of the Spanish came to find gold and silver to carry back to Spain. They found that there was much silver in the mountains of Mexico, and they fought against the Indians and gained possession of the country.



Mexican Policemen

The Indians of Mexico were not so wild and barbarous as those that lived in this country. They had learned to do a great many things that civilized people do. Some of these Indians were called Aztecs. The Spanish were cruel to them and forced many of them to work as slaves.



A Mexican Cart

After a long time the native people of Mexico fought against the Spaniards and conquered them, and they now have a government like ours. They have separate states and choose a president. Their capital city is the City of Mexico.

Many of the Spaniards have remained in Mexico. Some of them have married Indian wives, and their children are half-breeds. But there are still many pure Indians. Most of the Mexicans work hard in the mines and on the ranches, and are very poor and ignorant.

1. What river must we cross to go from the United States into Mexico?
2. Name the peninsula in the southeastern part of Mexico.
3. In what part of the country is the City of Mexico?
4. Name the cities on the coast of Mexico.
5. Make a map of Mexico, showing the mountain ranges and the principal cities.

51. Central America

South of Mexico the land of North America becomes very narrow, and at the Isthmus of Panama, which connects North America and South America, it is so narrow that a man could almost walk across it in a day. This long and narrow land is called Central America. It contains six very small countries which, like Mexico, have become independent of Spain. Most of the people are Indians or half-breeds. These little countries often have trouble with one another and go to war, but the United States and Mexico are striving to persuade them to settle their troubles peacefully.

Central America is so far south that it has a very warm climate. The plants and crops that grow there are different from those in our country. One of the crops is coffee. We Americans use so much coffee that we should know how it



Coffee in Blossom

grows. We drink more coffee than any other people in the world. All that we use in a year would amount to as much as ten pounds for every man, woman, and child in the country.

Coffee plants grow as large as small trees. When young, they are very delicate. They need warm, rich soil, but in a hot climate the sunlight may be too strong for them, and they are often planted where they will grow in the shade of other larger trees.

In the spring there are white blossoms on the coffee plants. When the blossoms fall, berries grow. These look like red cherries. Inside the husk of a berry there are two seeds with the flat sides together.



Harvesting Bananas

When the berries are ripe, they are picked, and the seeds are removed by machines and dried. Then they are ready to be sent to market. They are put into bags and sent away to countries where no coffee is raised.

Many of the bananas that we see in the fruit stores come from Central America. The banana plant grows to twice or three times the height of a man. It has very long leaves. It has a very large, bright red blossom, and after this a bunch of little bananas begins to grow. The bunches are gathered before they are ripe, in order that they may be sent to distant markets without spoiling.

We are now much interested in Central America, because our government is digging across the Isthmus of Panama a canal, by which ships may go from one ocean to the other.

1. About how long is Central America?
2. Across what sea do ships pass in going from the Atlantic Ocean to Central America?
3. About how far is it from the mouth of the Mississippi River to the Panama Canal?
4. What city is near the entrance to the Canal, in the Caribbean Sea?
5. What city is near the other entrance to the Canal, in the Pacific Ocean?



The Route of the Panama Canal

REVIEW

1. In what parts of Canada are crops raised like those in the United States?
2. Tell about the French in Canada.
3. Tell about the government of Canada.
4. Describe the St. Lawrence River.
5. Where are fur seals found?
6. What is done with their skins?
7. For what purposes are the seals in the Atlantic Ocean used?
8. Where are valuable whales mostly found?
9. Describe how sailors capture whales.
10. Where do Eskimos live?
11. Tell about the manner of life of the Eskimos.
12. Why has not Mexico a very hot climate?
13. Tell about the Spaniards in Mexico.
14. What kind of government is there now in Mexico?
15. Tell about the different classes of people in Mexico.
16. Explain how coffee is raised.
17. Describe the banana plant.
18. Why are we much interested in Central America?

52. SOUTH AMERICA

South of Central America is the continent of South America. It is about two thirds as large as North America.

Indians lived in South America, as well as in North America, before white people came. The Spaniards, who conquered the Indians in Mexico, came to South America also, and took possession of most of that continent. One part of the continent, called Brazil, was taken by the Portuguese.

Some of the Indians were wild and savage, but there were some, called Incas, in the western part of the country, who were partly civilized, like the Aztecs in Mexico. The Spaniards overcame these Incas, robbed them of their silver and gold, and forced them to work in mines as slaves.

After about three hundred years the people of South America rebelled against the Spaniards, as the people of Mexico and Central America did. They became independent and formed governments of their own. They did not unite in one country, but had several separate countries. The people of Brazil also became independent of Portugal.

1. What is the name of the range of high mountains in the western part of South America?
2. Where is Cape Horn?
3. The Strait of Magellan is named from Magellan, a sailor who first passed through it. Where is that strait?
4. Has South America as many good harbors as North America?
5. Name all the countries of South America.
6. Make a map of South America, showing the division into countries and the mountains.



53. Latitude and Longitude

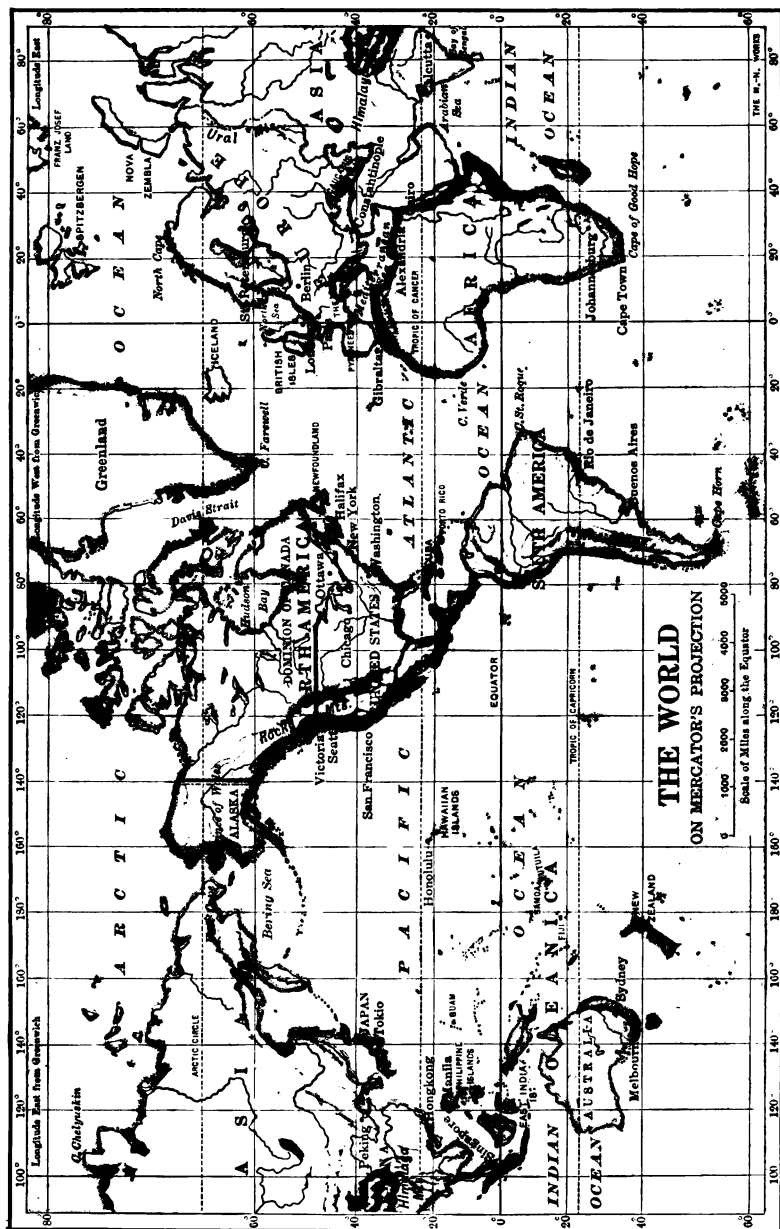
In the United States at noon we do not see the sun directly overhead. It is considerably toward the south. If we should go to the northern part of Mexico, the sun there would be higher in the sky. If we should go farther south, we should at last come to a place where the sun would be directly overhead at noon.

If we should go on still farther, toward the southern part of South America, the sun would not then be directly overhead at noon, but down a little toward the north. After a time we should reach a place where it would be as far down toward the north as it seems to us in the United States to be down toward the south.

The line around the earth in the middle of that region where the sun is sometimes overhead at noon is called the *equator*. Distances are reckoned from this line north and south. Places north of the equator are in north latitude and places south of the equator in south latitude.

The equator is everywhere halfway between the North Pole and the South Pole. The distance from the equator to the North Pole is divided into ninety parts, called degrees, and the distance from the equator to the South Pole into ninety parts. The latitude of a place that is north from the equator far enough to make ten degrees is said to be at ten degrees north latitude. A place ten degrees south of the equator is said to be ten degrees south.

Lines running east and west upon maps show at what latitude places are. These lines are called *parallels of latitude*. They are divided into degrees.



We must also have a way to show how far east or west places are. We must take some line to start from, and then tell how many degrees a place is east of this line or west of it.

A line reaching entirely around the earth at the equator makes a circle. We can think of this circle as divided into 360 equal parts, or degrees. Now think of a line drawn from the North Pole to the South Pole cutting across the equator, just as we might cut half-way around an orange. We can reckon east and west from this line. If another line is drawn from the North Pole to the South Pole passing through the equator twenty degrees east of the first line, any place on the second line will be at twenty degrees east longitude. If a line is drawn passing through the equator twenty degrees west of the first line, any place on this line will be at twenty degrees west longitude.

The line that has been taken as the starting line for reckoning longitude is the one that would pass through a place named Greenwich, in the city of London, in England. North and south lines, by which longitude is reckoned, are called *meridians*.

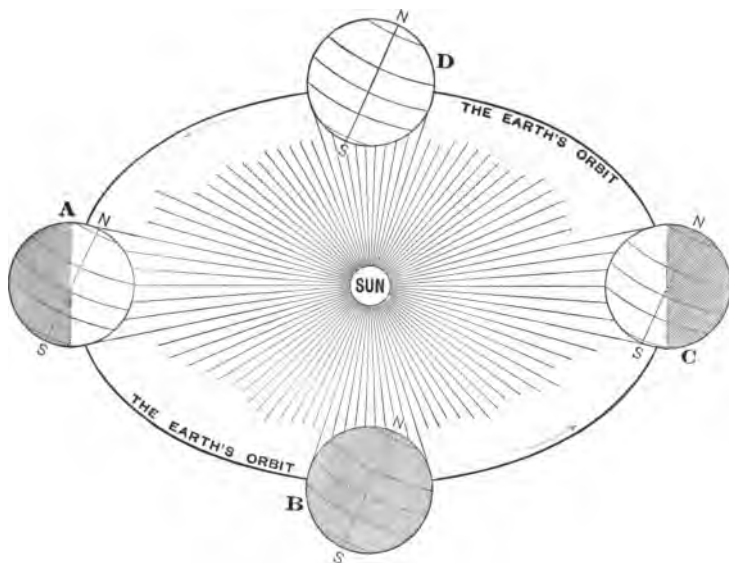
Halfway around the earth, east longitude and west longitude meet, and no place can have more than one half of 360 degrees, or 180 degrees of longitude.

1. When the sun is directly overhead at the equator, does it seem to the people of Venezuela to be a little toward the north, or a little toward the south?

2. Would it then seem to people in Argentina to be toward the north or toward the south?

3. Would it then seem to be more nearly overhead to people in Bolivia or to people in Argentina?

4. At about what latitude is the northern coast of South America?
5. Find some states in the United States through which the meridian of 100 degrees west longitude extends.
6. Why do ships at sea tell where they are by giving the latitude and longitude?
7. At about what latitude and longitude is a ship when it is sailing around Cape Horn?
8. Find where a ship would be if its latitude were twenty degrees north and its longitude eighty degrees west.



54. The Seasons

If the sun at noon were always directly overhead at the equator, it would always be warmer there than at any places farther north or south. At any place the sun at noon would always seem to be at the same distance from a point directly overhead, and the weather would never become much colder or much warmer. But we know that this is not true. In winter the sun

seems to us to be farther down in the sky than in summer, and the weather is much colder.

The earth travels around the sun once a year in a path that is nearly in the form of a circle. This path is called the earth's orbit. As the earth moves through its orbit, it is so tipped that a part of the time the northern half is turned toward the sun more than the southern, and a part of the time the southern half is turned toward the sun more than the northern. At two points on its journey neither half is turned toward the sun more than the other.

The equator is always halfway from the North Pole to the South Pole, and at the time when the northern part of the earth is turned toward the sun more than the southern part, the sun is not directly overhead at the equator. At that time the sun seems to us in the United States to be farther up in the sky than at other times, and it shines more directly upon us. The days are longer than the nights, because the sun is shining upon us more than one half of the time. This makes the weather warmer, and we call the season summer.

When the southern part of the earth is turned toward the sun and the northern part is turned away from it, the sun seems to us to be farther down in the sky, and the nights are longer than the days. This makes the weather colder, and we have winter.

The season between winter and summer, when the days and nights are more nearly equal, we call spring, and the season after summer we call autumn.

1. When the earth is in position *A* (see page 131), on its way around the sun, what season of the year is it in the United States?

2. What season of the year is it then in the southern part of South America?
3. When the earth is in position *B*, what season is it in the United States?
4. What season is it then in regions south of the equator?
5. What season is it in the southern part of South America when the earth is in position *C*?
6. In which of the four positions is the earth when it is spring in the United States?
7. Copy the drawing, showing how the earth revolves around the sun.

55. Brazil

The largest country of South America is Brazil. It is nearly as large as the whole of the United States.



A Scene on the Amazon

Since the equator crosses that country, we know that the climate must be very warm.

The Amazon River in Brazil is the largest river in the world. Near its mouth it is several miles wide and looks like a great lake. There are two reasons why

the Amazon is so large. The first is because nearly all the rivers of Brazil flow into it. We can imagine how large a river we should have if all the rivers of our country flowed into the Mississippi. But even then the Mississippi would not be as large as the Amazon, because it does not rain so much in the United States as in Brazil. There are showers in Brazil almost every day.

There are usually more showers in hot weather than in cold weather. When the air near the earth becomes heated in the middle of the day, it becomes lighter and rises far up into the cold air above. This cools it and causes rain to fall.

As the air passes over the ocean east of South America, it gathers much moisture from the water. When it passes over the land, it is heated in the hot sunshine until it rises into the cold air above. Then it becomes cool enough to let its moisture fall in showers. Much of the water runs into the smaller rivers, and then into the Amazon, and so passes into the ocean.

In the country of Brazil, through which the Amazon River flows, there are vast forests. There is so much rain and the soil is so good that trees grow near together and very tall. Many ferns and vines also grow among the trees. It is difficult to go through the woods without cutting away trees and vines.

In the Brazilian forests are many wild animals. There are birds of beautiful colors, monkeys climbing about the branches, and great serpents coiled up in the trees.

Not many white people live in that region, but some Indians live near the rivers. These Indians make

rubber from the sap of rubber trees. They make openings in the bark of the trees, fasten cups under the openings, and then the white sap flows slowly out into the cups. Every day the Indians gather the sap, carry it to their huts, and build fires of palm nuts. Then they dip sticks into the sap and hold them in the smoke till the sap hardens. Then they dip again, and continue until balls of rubber have formed on the sticks.



Natives drying Rubber

Boats that go up and down the river call here and there and collect the rubber that is ready for the market. A large amount of it is taken to Para, a great rubber center near the mouth of the Amazon. It is sent from Para to cities in the United States and Europe, where many useful articles are manufactured from it.

We have learned that coffee grows in Central America, but much more grows in Brazil. On the hillsides in the southeastern part of Brazil more coffee is produced than in all other countries of the world together.

The city of Rio de Janeiro is a great center of coffee trade. Most of the coffee used in the United States comes from that city. It is often called Rio coffee. Rio de Janeiro is larger than Boston, or Baltimore, or St. Louis. It has a very large and safe harbor.



Part of the Harbor at Rio de Janeiro

1. Are there as many rivers flowing into the Amazon as there are flowing into the Mississippi?
2. Give the names of two large rivers in South America besides the Amazon and the rivers that flow into it.
3. Why are there not large rivers in South America flowing into the Pacific Ocean?
4. Why do most of the Indians in Brazil live near rivers?
5. Name as many articles as you can think of which are made of rubber.

56. Argentina

In Argentina the land is much like that of the prairies and the Great Plains of the United States. The plains there are called pampas. On some parts of the pampas there are great wheat-fields, and on others very large flocks of sheep and herds of cattle feed upon

the grass. Because the climate is comfortable and there is much rich land, thousands of people from Europe have settled in Argentina.

Many cattle used to be killed on the pampas for their hides alone. It was so far from the cities of Europe that meat could not be sent without spoiling, and it was simply thrown away. Now it is sent on steamships supplied with refrigerators, and is no longer wasted.



Cattle in Argentina

Hides are used to make leather for shoes, harnesses, and other articles. They can be sent a long distance without spoiling. Many are taken to Philadelphia and other cities of the United States. They are soaked in liquids at tanneries and changed to leather. Some of the liquids for tanning are prepared by soaking the bark of hemlock trees and oak trees. The leather is then oiled, colored, smoothed, or split, as it is wanted for different uses.

A large part of all the leather that is produced is used in shoe factories. Shoes were once made by hand, but now they are mostly made by machines in large factories. In a shoe factory thousands of pairs of shoes are made every day. There are many such factories in Lynn, Haverhill, and Brockton, in the state of Massachusetts.

Such quantities of wheat, meat, wool, and hides as the people of Argentina have to sell, and the great amount of goods that they need to buy from other countries, must make business enough for a large trading center. It is this business which has made Buenos Aires a very important city. It is nearly as large as the city of Philadelphia. Railroads have been built from Buenos Aires across the country in all directions, as they have been built from our city of Chicago. Boats also can go a long distance up the Plata River and its branches. Many ships from Europe and some from the United States are to be seen in the harbor of Buenos Aires.

1. Give two reasons why the Plata River is not so large as the Amazon.
2. Why do more people go to the eastern coast of South America to settle than to the western coast?
3. Why do more go to the southern part than to the northern part?
4. Can you think of any reason why hides are not tanned before they are sent away from Argentina?
5. On a voyage from Argentina to Philadelphia, would the weather probably grow warmer or colder after leaving Argentina?
6. Would the weather become warmer all the way to Philadelphia?
7. If it were summer in Argentina, what season would it be in Philadelphia?
8. Make a map of South America, showing the rivers and the largest cities.

REVIEW

1. Tell about the Spaniards and Portuguese in South America.
2. Tell about the Incas.
3. How many countries are there in South America?
4. What is the equator?
5. Explain how latitude is reckoned.
6. What are parallels of latitude?
7. Explain how we reckon longitude.
8. What are meridians of longitude?
9. Where is the meridian from which longitude is reckoned?
10. If the sun were always overhead at noon at the equator, what effect would this have upon the seasons?
11. What season of the year do we have when the northern part of the earth is turned a little toward the sun?
12. What two seasons do we have when neither the northern half of the earth nor the southern half is turned toward the sun?



On a Rubber Plantation

13. How large is the country of Brazil?
14. How large is the Amazon River?
15. Why is the Amazon so large?
16. Name some animals that are found in the forests of Brazil.
17. Explain how rubber is obtained.
18. How much coffee is raised in Brazil?
19. Tell about Rio de Janeiro.
20. Why is the climate cooler in Argentina than in Brazil?
21. Describe the land in Argentina.

57. EUROPE

Across the Atlantic Ocean to the east are the continents of the Eastern Hemisphere, or the Old World.

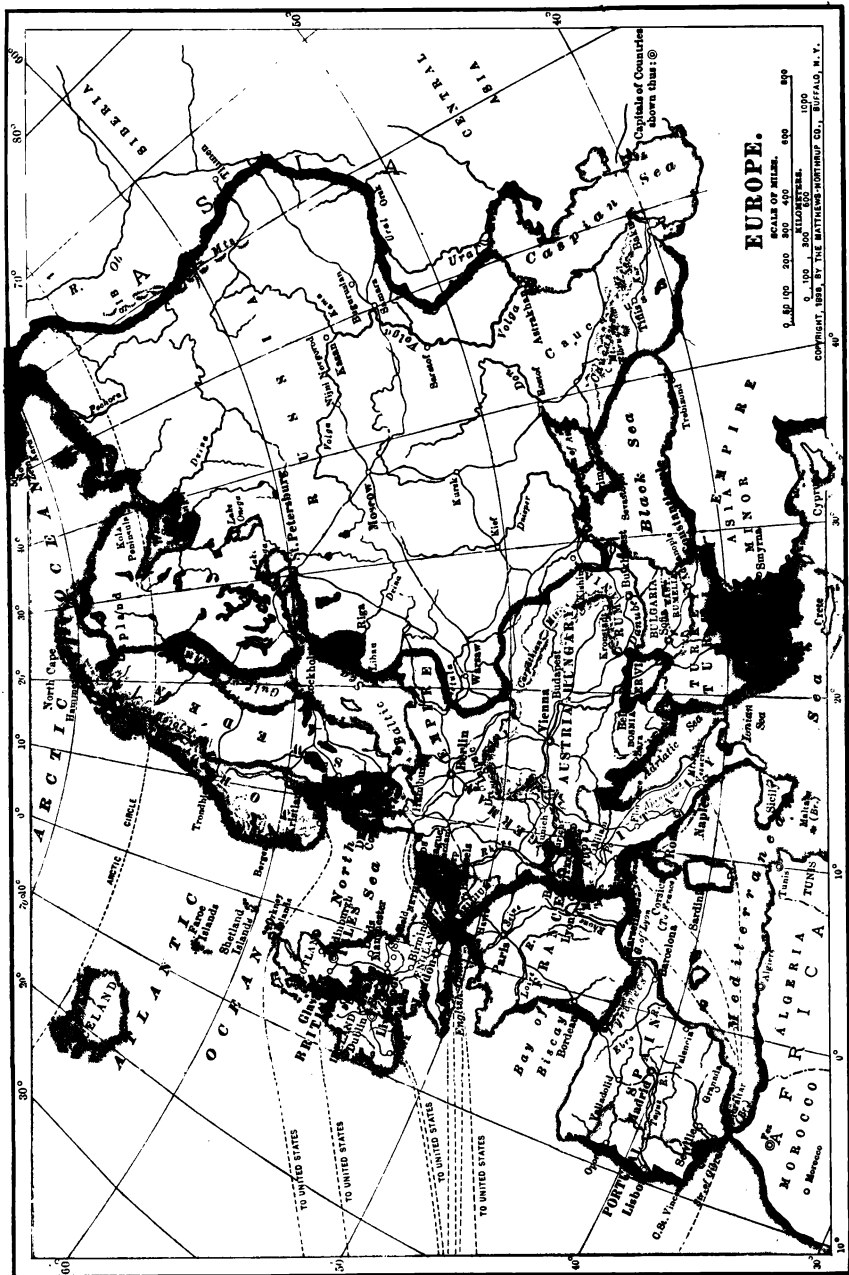
We have a greater interest in the continent of Europe than in any other part of the world besides our own, because most of our ancestors came from the countries of Europe.

Nearly all the people of Europe belong to one great race, called the white, or Caucasian, race; but in different countries they speak different languages and have different governments. The white race is more highly civilized than any other race in the world.

Europe is not much larger than the United States, but it contains more than four times as many people. This is partly because the United States is a new country. At some time there may be as many people in our country as in Europe.

The western part of Europe is irregular in form. Many bays and seas reach far into the land, and none of the inhabitants live very far from waters that are connected with the ocean. This fact has been of great benefit to the people. They have been able to go from place to place and carry on business with one another more easily than those can who live far from the sea.

There are several ranges of mountains in Europe extending in different directions. In Scotland the mountains are old and have been mostly worn away, like the Appalachian Mountains in the United States. Other mountains, such as the Alps, the Pyrenees, and the Caucasus Mountains, are not so old, and are still very high.



A large part of the land north of these high mountains is low and nearly level. It is somewhat like that of the central part of the United States. On rivers and canals in these level regions ships and boats can go long distances from the sea.

1. What is the name of the very large sea south of Europe?
2. What two seas are between Europe and Asia?
3. Give the names of other seas around Europe.
4. How many large islands can you count near the coast of Europe?
5. Write the names of all the countries of Europe.
6. When it is summer in Europe, what season is it in the southern part of South America? In the United States?
7. Make a map of Europe, writing on it the names of the countries.

58. Manufacturing in Great Britain

Coal is found in several countries of Europe. A large amount is obtained in Germany, but more in England, Scotland, and Wales—the three divisions of the large island called Great Britain. Great Britain and Ireland together are called the British Isles. They are also sometimes called the United Kingdom of Great Britain and Ireland, or simply the United Kingdom.

Great Britain is not so large as our single state of Colorado, but nearly as much coal is obtained in the mines of that country as in the whole of the United States.

Some of the coal is sent to other countries, but most of it is used at home for manufacturing. Water power from the hill streams and the great amount of coal for steam power make Great Britain one of the most important manufacturing countries in the world.

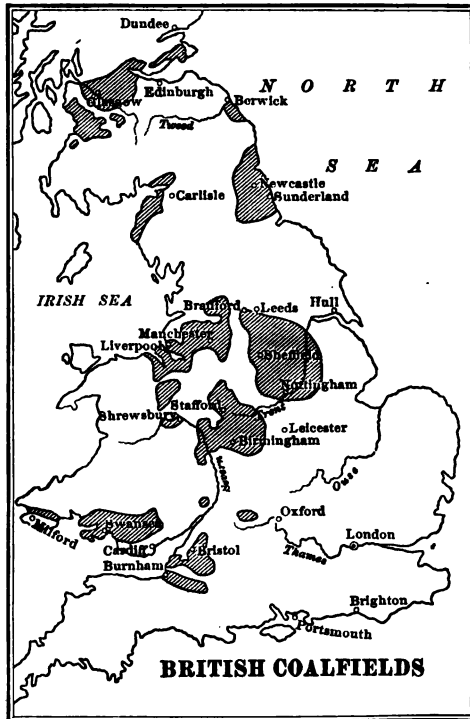
Moisture from the ocean and seas around Great Britain causes an abundance of rain. This keeps the grass green

and makes good pasture for sheep. The people raise many sheep and make cloth from the wool. They also buy much wool from other countries. They buy a great amount of cotton from the United States and manufacture cotton cloth.

Much of the cotton shipped to Great Britain from the United States is sent to Liverpool, and is then taken through a canal to Manchester, where there are many great cotton factories.

Near the coal mines in Great Britain are many iron mines. There is also limestone near by. It is therefore easy to make iron from the ore, and many articles of iron and steel are manufactured.

London, the capital of England, is the largest city in the world. There is not a great country around London, as there is around New York and some other large cities, in which to buy and sell goods. But, although Great Britain is very small, it has nearly half as many people



as the whole United States. Coal and iron are so abundant that there are many manufacturing cities. All the people who work in the mills, and their families at home, must have food, and a great part of their supply of food is brought in ships from other countries to London.

Since the British people have always lived in a small country surrounded by the ocean, they have been inclined to build many ships. They have more ships upon the ocean than any other people in the world.



Shipping on the Thames in London

Some countries, such as Canada, and many islands in various parts of the world belong to the United Kingdom, and are called British colonies. Great Britain and all the colonies together are called the British Empire. British ships carry manufactured articles to the colonies and other countries, and take back food and other articles that the British people wish to buy.

London is situated as far up the Thames River as

large ships can go. Along the London docks on both sides of the river, for many miles, ships may be seen from nearly all the countries of the world.

1. Name cities in the United States from which cotton might be sent to Manchester, England.

2. Where in the United States are coal and iron found near together, as in Great Britain?

3. Explain how iron is obtained from iron ore.

4. Why is Glasgow a convenient place for building ships and locomotives from iron and steel?

5. Name some articles which British ships would be likely to carry from New York to London or Liverpool.

6. Name articles that might be sent from Buenos Aires to London.

7. Name the bodies of water that surround Great Britain.

8. Make a map of Great Britain, showing the mining regions and the largest cities.



Building the "Campania" at Glasgow

59. The Linen of Ireland

Linen is produced from a plant called flax. Flax grows like a field of grain. Its seeds contain an oil, called linseed oil. This is pressed from the seeds and is used mostly for mixing paint. After the oil is pressed out, the part that remains is used as food for farm animals. The flax grown in the United States has until recently been raised chiefly for the seeds.

In Europe the people make use of the stalks of the

flax plant. The stalks contain long, tough fibers, and these are used, like cotton and wool, for making cloth.

Much flax is raised and manufactured in the northern part of Ireland. The climate of Ireland is very moist, and a moist climate is most favorable for flax.



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Weaving Room in a Belfast Linen Factory

When flax is ripe, it is pulled up and laid on damp ground or in water until the woody substances that hold the fibers together have softened and loosened. After the fibers of flax have been separated by machines, they are combed out straight, spun into thread, and woven into handkerchiefs, napkins, lace, and many other articles. Cloth made of flax is called linen.

A great amount of flax is manufactured in Ireland, in the city of Belfast. The Irish people not only manufacture the flax that they raise, but also buy large quantities from Belgium and Russia. More flax is raised in Russia than in any other country.

1. In what part of Ireland is Belfast?
2. On what waters would a vessel sail in carrying flax from St. Petersburg, in Russia, to Belfast?
3. Across what two large seas would a vessel sail in going to Belfast from Odessa, in southern Russia?
4. Name three cities on the coast of the United States to which ships might bring Irish linen from Belfast.
5. Name as many articles as you can think of that are made of linen.
6. Make a map of Ireland, showing the cities of Belfast and Dublin, and name the surrounding waters.

REVIEW

1. Why are we specially interested in the continent of Europe?
2. To what race of people do Europeans mostly belong?
3. Tell about the number of people in Europe.
4. Why has the irregular form of Europe been a benefit to the people?
5. What mountains in Europe are like the Appalachian Mountains?
6. What mountains of Europe resemble those in the western part of the United States?
7. Why can boats go long distances from the sea in a large part of Europe?
8. Name countries of Europe in which much coal is found.
9. What are the three divisions of Great Britain?
10. What are the British Isles?
11. State how much coal is obtained in Great Britain.
12. What use is made of most of the coal?
13. Where do the people of Great Britain obtain most of the cotton for their cotton factories?
14. Why is much iron produced in Great Britain?
15. How many ships has Great Britain upon the ocean?
16. What is the British Empire?
17. Where is London situated?
18. Describe the flax plant.
19. For what purpose are the seeds of flax used?
20. Explain how linen is made from flax.
21. From what other countries is flax sent to Ireland?

60. The Silk of France

In France large quantities of silk goods are manufactured. Some of the silk of which the goods are made is produced there.

Silk is made by silkworms. For their food these worms must have the leaves of the mulberry tree. On this account they can be raised only where mulberry trees will grow. These trees thrive in the warm valley of the Rhone River in France, and the city of Lyons is a great center for the manufacture of silk.



Silkworm, Mulberry Leaves, Moth, and Cocoons

Leaves are picked from mulberry trees and laid upon boards or in boxes beside the young worms that have been hatched from the eggs of silk moths. The young worms eat many leaves and grow rapidly. After they are full-grown, they spin cocoons. Each cocoon consists of a silk fiber which, when unwound, may be over a mile long.

The fibers of these cocoons must be carefully unwound. They are so small that several of them are put together to make a thread large enough for weaving.

The French people are skillful in making beautiful articles from silk. They buy large quantities from Italy and countries in Asia where the mulberry tree grows.

When Americans go to France, their steamer may take them first to Havre, where the harbor is deep enough for ocean vessels, but Paris is a much larger city. It is larger than any other cities in the world except London and New York. It is not near the ocean, but small ships can reach it by going up the Seine River.



A Public Garden in Paris

Much of the land in France is so nearly level that canals have been dug between different rivers, and boats can pass from one river to another. In this way many boats can reach Paris. There are many railroads from Paris to different parts of France, and by the rivers, canals, and railroads the city is the center of trade for the whole country.

Paris is the most beautiful large city in the world. The French people are fond of what is beautiful and

graceful, and have done much to make their chief city attractive. It has many fine streets and parks, handsome buildings, and rare paintings and statues.

1. In what part of France is the city of Lyons?
2. Give the name of a city near the mouth of the Rhone River at which ships stop on their way to Lyons.
3. Name as many articles as you can think of that are made of silk.
4. Give the names of the three largest rivers of France.
5. Make a map of France, showing the rivers and the largest cities.



A View on the Rhine

61. The German People

So many Germans have come to our country to live, that it is interesting to learn about the German people in their home country in Europe. They have twenty-six states. These were once separate and independent, but are now united in what is called the German Empire.

The Germans are highly educated and very skillful. They have made many valuable discoveries that have been of great benefit to the world.

Germans first discovered that sugar could be made from beets. Before that time sugar was made almost wholly from sugar cane. The Germans and many other people had to buy what they needed from countries where sugar cane would grow. At present more than one half the sugar used in the world is beet sugar, and more is made in Germany than in any other country.

The sugar is in the juice of the beets. These are sliced, soaked in hot water, and pressed. Then the sugar is obtained by boiling down the juice.

In Germany many things are manufactured in the homes of the people, as well as in large factories.



A Home in the Black Forest

A region in the southern part of the country is called the Black Forest region. In the cottages of the people who live among the forests many children's toys are made. If we should look in at the door of one of these cottages, we might see the whole family at work upon dolls, or lambs, or tiny Santa Clauses, many of which would be seen on the next Christmas Eve hanging from our own Christmas trees. We buy every year of the Germans several million dollars' worth of children's toys.

The Germans are justly proud of their cities, especially of Berlin, their beautiful capital, and of Hamburg, which is the largest seaport on the continent of Europe. If we should make a trip to Germany from New York, we should very likely sail to Hamburg, and there we should see ships from America unloading cotton, or meat, or other goods that we have to sell.



One of the Gates of Berlin

1. In what direction does the land generally slope in Germany?
2. Give the names of several rivers of Germany.
3. On what river is Hamburg?
4. Through what country must a ship pass to go into Germany by the Rhine River?
5. What river rises in Germany and flows through Austria-Hungary into the Black Sea?
6. Give the names of two cities of Austria-Hungary on this river.

62. The Grain Fields of Russia

We have learned that grain can be raised best where there are broad fields of level land, partly because the soil is better on level lowlands and partly because it is easier to cultivate and harvest the crops. There is a

very large region of such land in the central and northern parts of Europe, especially in Russia.

The Russians raise immense quantities of wheat, rye, and flax. They raise more flax than any other people, but do not manufacture much of it. They send it to Ireland and other countries.



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Russian Peasants in the Hayfield

Russian peasants raise much rye for their own food. Rye bread is dark in color and is called "black bread." It is not so nourishing as bread made from wheat, but is less costly, and most of the Russians are so poor that they cannot afford anything better.

More wheat is grown in Russia and the United States than in any other countries of the world. In the western and southern parts of Europe, there is not food enough raised to supply the wants of the many people who live in the cities. Much wheat is therefore bought

from Russia and other countries. Some of the wheat is sent in vessels from Odessa across the Black Sea, then past the famous city of Constantinople to the Mediterranean Sea, and to the cities of western Europe.



A Mosque in Constantinople

1. How many of the other countries of Europe do you think it would take to make a country as large as Russia?
2. Can you think of reasons why there are not so many people in Russia as in the western part of Europe?
3. In what part of Russia is the city of Moscow?
4. In what country is Constantinople?
5. On what waters would a ship sail in going from the shore of the Baltic Sea to London?
6. Name two large rivers of Russia that flow toward the south.

63. The Mountains of Switzerland

The little country of Switzerland is often called the pleasure ground of Europe. Thousands of travelers visit it every year in order to see the Alps.

These lofty mountains have green woods and pastures on their sloping sides. They have caps of snow and ice reaching far up among the clouds, and foaming streams leap down from cliff to cliff to lakes in the valleys.

Some travelers climb to the tops of the mountains, but there is danger of slipping and falling, and it is neo-

essary to have the aid of guides. When several persons go, they are fastened together with a rope, so that if one should slip, the others might prevent him from falling.

Can you imagine how it would seem to be on the top of one of those mountains? It is very cold so high up in the air, and it is very still, because all the noises of the busy world are so far below.



A Glacier in Switzerland

On the tops of such very high mountains the storms are mostly snowstorms. The masses of snow and ice that accumulate there move very slowly down the sloping valleys until they reach warmer regions and are melted away. They look like great rivers of ice and are called glaciers.

The Swiss people, who live among these mountains, have always been proud of their country and have fought bravely against those who have tried to take it from them. They are proud of their hero, William Tell,

who a long time ago refused to obey a cruel Austrian governor.

They are very industrious people. They have many hotels for summer visitors. They make fine watches and clocks, beautiful lace, and other articles that require patient labor. In pastures on the mountain sides they have herds of sheep, goats, and cattle, and make much butter and cheese. Fine cheese from Switzerland can be bought in many American stores.

1. Why does it grow colder as we go higher up a mountain?
2. Why should you not expect to find very large cities in Switzerland?
3. What river rises in the mountains of Switzerland and flows through Germany?
4. Name all the countries that surround Switzerland.

REVIEW

1. In what part of France is much silk produced?
2. Explain how silkworms are raised.
3. Why do the French buy silk from other countries?
4. From what other countries do they buy silk?
5. Explain how boats can reach Paris.
6. Describe Paris.
7. Tell about the government of Germany.
8. Tell about the German people.
9. Tell about sugar beets in Germany.
10. What is interesting about the Black Forest region?
11. Name two large cities of Germany.
12. What kinds of grain do the Russians raise in large quantities?
13. What do they do with most of their flax?
14. For what purpose do they use rye?
15. How much wheat is raised in Russia?
16. What becomes of the wheat?
17. Describe the mountains of Switzerland.
18. Tell how travelers climb these mountains.
19. Explain the glaciers.
20. What kind of people are the Swiss?
21. What are some of the occupations of the Swiss people?

64. ASIA

Asia is the largest of all the continents. It is twice as far across Asia as it is across the United States. That continent reaches across so many degrees of latitude that the climate, though very cold in the northern part, is very warm in the southern part.

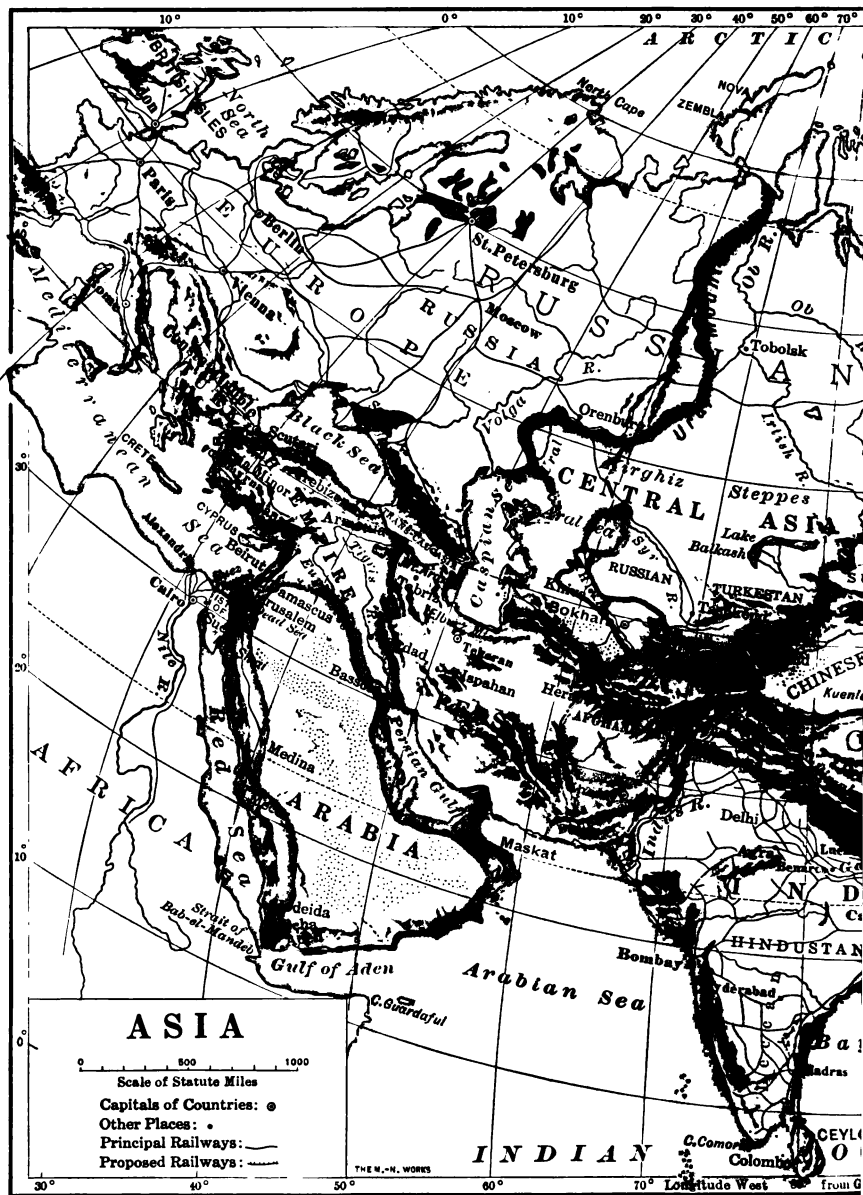
In the cold north is the vast level country of Siberia. It belongs to Russia, which is the largest country of Europe. The southwestern part of Asia is of special interest to us because it contains the land of Palestine and the scenes of the stories of the Bible.

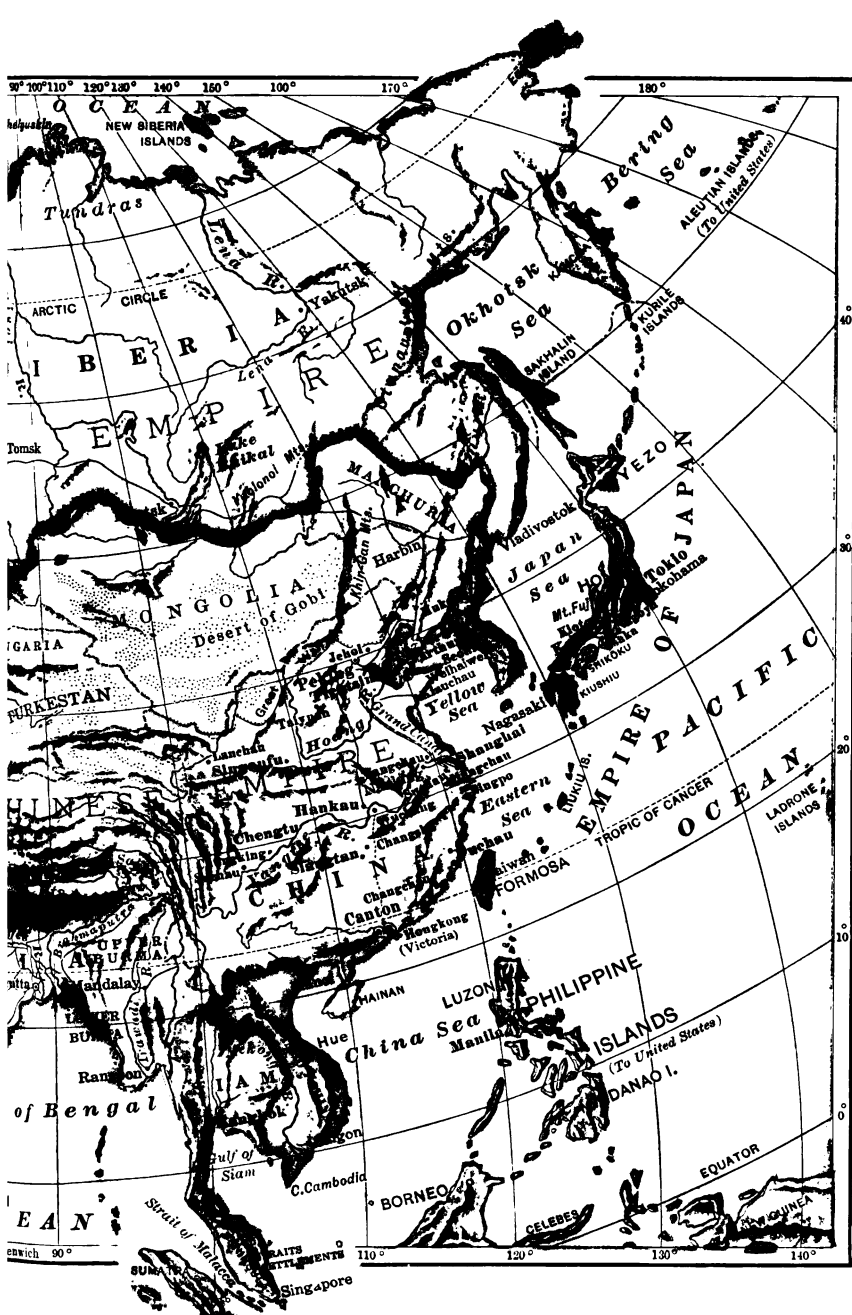


A View of Jerusalem

About one half of all the people of the world live in Asia, and most of these live in the southern and southeastern parts. Along some of the rivers the people are so thickly crowded together that many live on the water in houseboats.

Most of these people belong to the yellow, or Mongolian, race. The Chinese and Japanese are of that race. The Mongolians have lived in Asia for many centuries. They were among the first people of the world to be-





come civilized. Long ago, while the people of Europe were still wild and barbarous, those of Asia had learned to use horses and to keep sheep, dogs, and other animals. They also raised wheat and other crops.

Those who afterwards went from Asia to Europe carried these customs with them. Since the people of Europe became civilized, they have made rapid progress; but many of those of Asia have remained nearly as they were thousands of years ago.

1. Why do the rivers in the northern part of Asia flow north?
2. Give the names of those rivers.
3. Name three large rivers that flow toward the east.
4. Give the names of the large seas and bays around the coast of Asia.
5. What country in North America is as far south as India?



Bathing in the Ganges

65. India

The country of India is only about one half as large as the United States, but it contains more than three times as many people as the United States.

The native people are called Hindus. Their complex-

ion is dark, but they really belong to the same race as white people. It is believed that the ancient home of the white people was in Asia, and that from there many went to Europe; but some of them went down to India.

Some of the people of India have peculiar beliefs and customs. They sometimes starve or torture themselves for a long time. They believe that the more they suffer, the better it will be for them. They travel long distances to bathe in their sacred river, the Ganges.

The English long ago began to go to India to trade with



A Temple in India

the natives, and after a time they gained possession of the country and made it a part of the British Empire.

The native people live mostly upon rice and other kinds of grain. It takes a large amount of food to supply so many. In some seasons, when the weather has been dry and the crops have failed, there has not been food enough and many have starved. But usually more is produced than the people need, and large quantities are sent to other countries. A great amount of wheat is sent to the cities in the western part of Europe.

More cotton is raised in India than in any other country except the United States. Some of it is manufactured in cotton mills in the city of Bombay, but a large part is sent to the mills in Great Britain and other countries.

In the thick forests, or jungles, of India there are many large and fierce wild animals. Many elephants are tamed and become very useful. They carry people upon their backs and move heavy articles with their trunks. Tigers are a great terror to the people. They often dash out of the jungles and carry off men, women, and children, besides many domestic animals.

**Elephant****Tiger**

1. Name some cities of Europe to which you think wheat may be sent from India.
2. Through what canal would a ship pass in going from Calcutta to the Mediterranean Sea?
3. Name all the waters on which a ship would sail in going from Bombay to Liverpool.
4. What would a ship be likely to carry to England from Bombay?
5. Make a map of India, showing the largest rivers and cities.

66. China and Japan

The Chinese people occupy a vast country in the southeastern part of Asia, and the Japanese live upon large islands at some distance from the coast. In the year 1854 Commodore Perry sailed from the United States to Japan with a fleet of gunboats. He persuaded the Japanese to allow the people of civilized nations to enter Japanese harbors for trade. Since that time the Japanese have improved very rapidly. They have been

anxious to learn as much as possible from Americans and Europeans, and are now one of the powerful nations of the world.

The Chinese have changed their customs more slowly. Until recently they disliked to have foreigners come to their shores, but now they are glad to follow the example of their neighbors, the Japanese. Chinese



Rice Fields near Kobe, Japan

young men are sent to the schools of America and Europe, and many American and European teachers are employed in the schools of China.

The food of all these people is largely rice. Rice grows best where the ground is covered with water a part of the time. Much rice is raised in the United States on low land along the southern coast, especially in Louisiana and Texas.

So many people live in China and Japan that there are always many who will work for small wages. For this reason a great amount of silk is raised. It takes

so much time to care for silkworms and to unwind the cocoons and prepare silk for use that, if the people received high wages, silk would be too expensive for most people to buy. It is therefore raised chiefly in

countries where wages are low.



Sorting Tea Leaves

A great amount of tea, also, is raised in China and Japan. The tea plant is a bush three or four feet high. As the leaves grow, they are picked off and dried. All tea leaves are green when picked, but some are changed to a dark color in drying and preparing. Much of the green tea that is

used in the United States is brought from Japan, and much comes from the Japanese island of Formosa.

1. Name two large rivers of China.
2. Why are there no large rivers in Japan?
3. Name the cities along the coast of China.
4. What is the name of the capital city of China? Of Japan?
5. To what country of Europe may the Chinese send raw silk?
6. In what direction would a ship sail in carrying tea from Japan to the western coast of the United States?

REVIEW

1. How large is Asia?
2. Tell about the climate of Asia.
3. Tell about Siberia.
4. Why is the southwestern part of Asia interesting to us?



A Sedan Chair in China

5. How many people live in Asia?

6. In what part of the continent do most of the people live?

7. To what race do the people of Asia belong?

8. Tell about the ancient inhabitants of Asia.

9. Give one reason why the people of Asia have made so little progress.

10. How large is India?

11. How many people are there in India?
12. Tell about the peculiar customs of the Hindus.
13. Tell about the wheat which is raised in India.
14. What becomes of the cotton which is raised there?

15. Tell about the wild animals of India.

16. Tell about the voyage of Commodore Perry to Japan.

17. What changes have the Japanese made since that time?



Traveling in Japan

18. How have the Chinese compared with the Japanese?
19. How have the Chinese recently changed?
20. Explain how rice is raised.
21. Why is much silk produced in China and Japan?
22. Explain how tea is raised.
23. Name two cities on the western coast of the United States to which a ship might sail from Japan.

67. AFRICA

Africa is the largest of all the continents except Asia. It was once joined to Asia by the Isthmus of Suez, but the Suez Canal has been dug across this isthmus, enabling ships from the East to sail into the Mediterranean Sea and to the western part of Europe without going so far around.

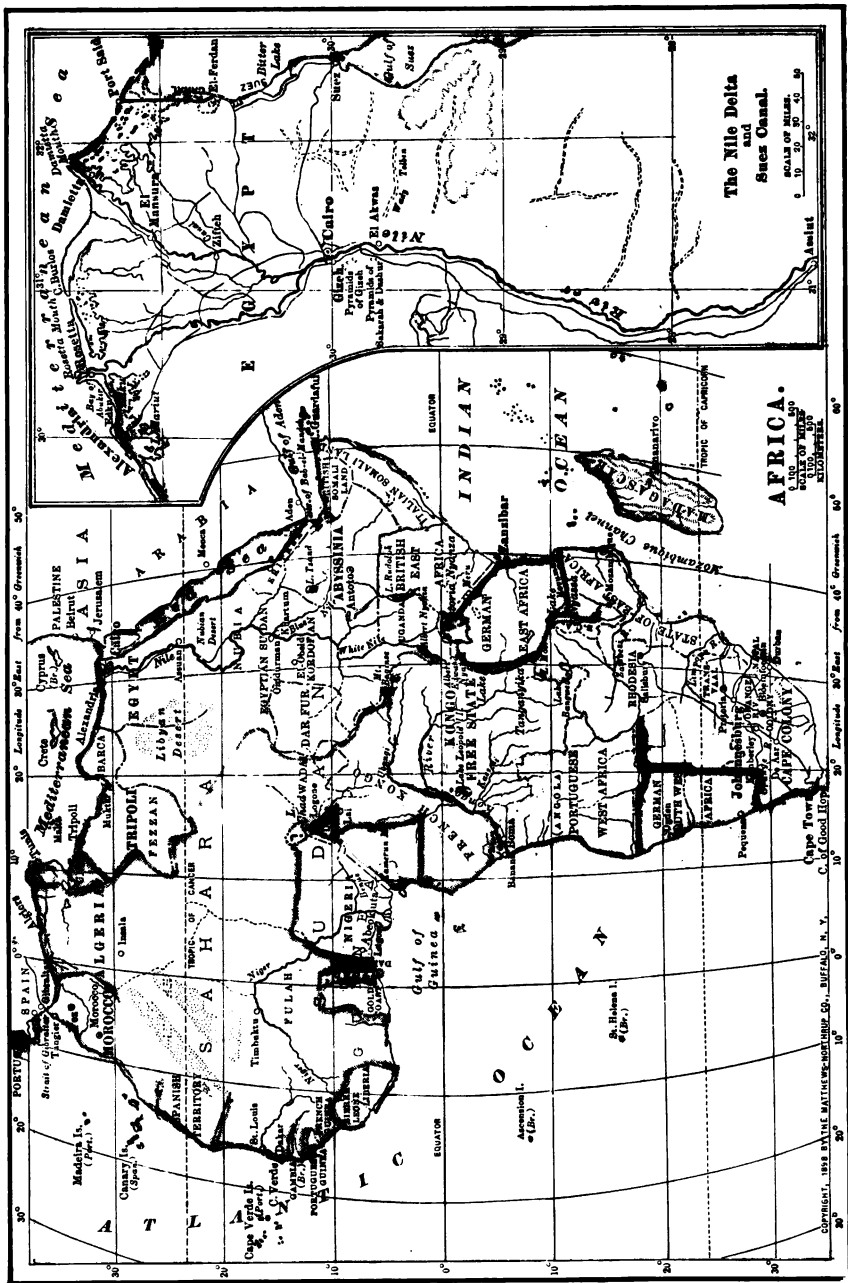
Africa has been the latest of all the continents to be explored by white people. This is partly because it has



A Caravan in the Desert

been so difficult to go into the country. There are not many gulfs, or bays, or deep rivers leading into the interior. Near the mouths of most of the rivers there are waterfalls that prevent boats from passing. Wild animals and savage tribes have increased the difficulty.

The wind that blows over the northern part of Africa does not come from the ocean, but from the land of Europe and Asia. It is not very moist and produces scarcely any rain. This is the cause of the Desert of Sahara, the greatest desert in the world, on which nothing grows except in scattered spots, called oases.



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In the central part of the continent, near the equator, there is a region like that of the Amazon River in South America. Much rain falls here, and thick forests and many wild animals abound.

1. Name the seas, gulfs, and bays around Africa.
2. What is the name of the cape at the southern point of Africa?
3. Give the names of five large rivers in Africa.
4. What large island is near the coast of Africa?
5. Which is farther from the equator, the northern part of Africa or the southern part?
6. Make a map of Africa, showing the mountains and the large rivers.



A View on the Nile

68. Egypt

The most interesting part of Africa is the land of Egypt, which Bible stories have made familiar to us. Egypt is only a part of the great African desert, and no

more people could live there than in other parts of the desert without the wonderful Nile River.

The Nile rises in central Africa and flows for hundreds of miles through a desert of dry sand. Once a year there is a very rainy season in the region of central Africa from which the river flows. This causes the Nile to rise high enough to overflow its banks and moisten the ground in its valley on both sides. After the overflow ceases, the people raise their crops.



An Egyptian Temple

On these fertile banks of the Nile the Egyptian people have lived since very ancient times. Three thousand years ago they were more civilized than any other people in the world. There are ruins of monuments and temples of the ancient Egyptians that are as wonderful as any modern buildings.

The native people now are not so intelligent as the ancient Egyptians were, but many English people and others have gone to the country and made great improvements. They have made dams to hold back the water in the river, and canals to carry water over the land and irrigate it.

The Nile has brought down a great amount of soil from the hills and mountains, and has formed a large delta like that at the mouth of the Mississippi River. On this delta is the best land of Egypt.

1. Why are there no small rivers flowing into the Nile for so long a distance?
2. In what part of Egypt are Cairo and Alexandria?
3. About how many degrees farther north than Cairo is London?
4. Name cities to which cotton raised in the Nile valley may be sent.
5. Make a map of the delta of the Nile, showing Cairo and Alexandria.

69. Central Africa



Native Grass Hut in the Congo State

Most of Africa was once inhabited by the black race, or negroes. Many white people have settled along the northern coast and in the southern part, but in the central part

there are still but few people besides the negroes. These natives live along the rivers and in the forests somewhat as the Indians live in the forests of Brazil.

In times past many negroes have been carried away from Africa as slaves. Many of them were brought to America, and the colored people of the United States are their descendants.

In the forests of Africa, as in the forests of southern Asia, there are large and dangerous wild animals. Some of these are the elephant, the rhinoceros, the lion, and

the tiger. The natives kill many elephants to get their large ivory tusks.

A strip of country along the northern border of the great forest region is called the Sudan. People from the northern coast of Africa make trips with camels across the great desert to the Sudan. They are obliged to travel a long distance over the hot sand without finding



Dutch Traders buying Ivory

any water, but the camels are able to drink water enough to last them a long time. Their broad feet also enable them to travel more easily on soft sand. Such a company of people with camels is called a caravan.

Goods are carried across deserts by caravans as they are elsewhere carried on ships and cars. Camels are sometimes called ships of the desert. The camels of the African caravans are loaded with articles that the natives wish to buy, and in returning they are loaded with ivory, beautiful feathers, and other native products that civilized people desire.



Rhinoceros

That part of central Africa through which the Congo River and its branches flow is called the Congo State. It belongs to Belgium. A great amount of rubber is obtained there.

1. Why are there more wild animals in central Africa than in other parts of the continent?
2. About how far do caravans have to travel to go from the northern coast of Africa to Timbaktu?
3. Can you name some things which the natives would probably wish to buy from the caravans?
4. Why are there not large cities in central Africa?
5. What large river is in central Africa?

70. South Africa

The southern part of Africa is so far south that it has a comfortable climate. Many years ago Dutch people from Holland settled there. They kept herds of cattle and sheep on the dry plains and, where there was sufficient rain, raised wheat and other crops. The descendants of these Dutch settlers are called Boers, which means farmers.

After a time rich diamond and gold mines were discovered in South Africa. Englishmen then went there and engaged in the business of mining, and many other English people went there to live.

Not many years ago trouble arose between the Boers and the English, and war broke out. The English conquered the Boers and made the country a part of the British Empire.

Most of the valuable diamonds in the world come from the diamond mines of South Africa, near the city of Kimberley. The diamonds are found in a kind of soft rock. This rock, or "blue ground" as it is called, is taken from the mines and spread out in the air, where it remains for a long time till it softens and crumbles. The



A Boer Farmhouse

clay is then washed away, leaving only gravel with diamonds scattered through it. The diamonds are afterwards separated with great care.

When first found, diamonds may be rough and not very beautiful. The glistening diamonds that we see have been carefully split and polished in factories. Much of this work is done in Amsterdam, in Holland.

There are also very rich gold mines in South Africa near the city of Johannesburg.

1. On what waters does a ship sail that goes from London to South Africa?

2. About how many miles is the voyage from London to Cape Town?
3. When it is spring in London, what season is it in South Africa?
4. In what season of the year should you think fruits of South Africa might be bought in London markets?
5. Why is the price of diamonds so high?
6. Make a map of the southern part of Africa, showing the Orange River, Kimberley, Johannesburg, and Cape Town.



A Diamond Mine in South Africa

71. Australia

Australia is the smallest of the continents. We may think of it as an island, but it is really a country nearly as large as the United States.

When the English first went to Australia they found it inhabited by wild, dark-colored people. Some of these still live in their wild state, roaming about and killing animals by throwing spears and other weapons. Many English people have settled in Australia, and it is a part of the British Empire.

There are many strange things in Australia. Some of the animals and plants are different from any that are found in other parts of the world. One of the strangest of the animals is the kangaroo. It runs upon its hind legs and carries its young in a pouch. The most common trees are eucalyptus trees, some kinds



Kangaroo

of which are now raised in the state of California, where the climate is about the same as that of Australia.

The wind usually blows over the country from the east and produces rain in the eastern part where there are hills and mountains. Farther west there is not so much rain, and that part of the country is very dry.

In the eastern part good farm crops are raised, but farther back from the coast the country is like the Great Plains of the United States. In these regions there are large sheep ranches. It is often difficult to find water for the sheep. In some places, when deep wells are drilled, water will rise to the surface and flow continually. Such a well is called an artesian well.

A great amount of wool is sent from Australia to England and other countries. Much meat, also, is sent to markets thousands of miles away. Steamships that carry the meat are fitted with great refrigerators, like those that carry beef and mutton from Argentina.

Many of the Australian people have gone there to work in the rich gold mines of the southern part of the country.

1. In what direction from Cape Town is Australia?
2. In what direction from San Francisco is Australia?
3. About what are the latitude and longitude of the central part of Australia?
4. In what different ways might a ship sail from England to Australia? (See map on page 129.)
5. When it is winter in Australia, what season is it in the United States?
6. Make a map of Australia, showing the cities of Sydney, Melbourne, and Adelaide.



Loading Hemp in the Philippines

72. Islands

In various parts of the world there are many islands that belong to different countries. Two groups of islands in the Pacific Ocean belong to the United States. The Philippine Islands, far across the Pacific, were joined to this country at the close of the war with Spain. The climate of these islands is very warm, and the soil is good for agriculture.

The most intelligent of the inhabitants are the Filipinos, who are sometimes called the "little brown

people." With the improved schools and good government that the Americans are giving them, these people are becoming educated and prosperous.

One of the chief crops that the people of the Philippines raise is Manila hemp. The hemp plant of the Philippines is similar to the banana plant. The natives



Oahu Tropical Road, Hawaii

cut down the tall stalks and strip off the long, tough fibers. They scrape away the fleshy matter and dry the fibers in the sun. Then they pack the hemp in bales and ship it to England and the United States, where it is manufactured into the finest kind of rope.

The Hawaiian Islands, near the middle of the Pacific Ocean, were joined to the United States in 1898. They are sometimes called the "Crossroads of the Pacific"

because so many ships stop at the port of Honolulu on their way to different parts of the world.

The dark-colored natives of the Hawaiian Islands are a very interesting people, but there are not many of them. Most of the present inhabitants are Chinese, Japanese, Portuguese, English, and Americans.

On account of the delightful climate many travelers enjoy visiting these islands. There are many large sugar plantations there. Raw sugar is sent to the refineries in San Francisco.

The large island of Porto Rico, one of the West Indies, was taken by the United States in the war with Spain. It is about one hundred miles long and is about two thirds as large as the state of Connecticut. It is a very fertile island. Some of the crops raised are coffee, sugar, tobacco, and many kinds of fruit.

In all these islands that have come into our possession the United States is striving to give the people good schools, good roads, and many other advantages, in order that they may fully enjoy all the advantages of civilized life.

While these large islands that belong to the United States are of greatest interest to us, there are hundreds of small islands and some large ones in various parts of the world that belong to different countries. Among the largest and most important of these are the islands of Cuba, Haiti, and Jamaica, in the same group with Porto Rico, and New Zealand, New Guinea, Borneo, Sumatra, and Java, which are not very far from Australia.



City Hall and Insular Government Building, San Juan, Porto Rico

1. In what direction from Australia are the Philippine Islands?
2. In what direction from San Francisco are they?
3. About how far would a ship sail in carrying hemp from the city of Manila to San Francisco?
4. Name the waters on which a vessel would sail in carrying hemp from Manila to Liverpool.
5. Are the Hawaiian Islands nearer to the Philippine Islands or to San Francisco?
6. About how far is the island of Porto Rico from New York City?
7. Name some kinds of goods that a ship might take from Porto Rico to New York City.

REVIEW

1. Why has not Africa been explored sooner by white people?
2. What is the cause of the great Desert of Sahara?
3. What is the cause of an oasis?
4. Where does the water of the Nile River come from?
5. Why does the Nile overflow its banks?
6. Tell about the ancient Egyptians.
7. What improvements have the English and other people made in Egypt?
8. Describe the delta of the Nile.
9. Tell about the people of central Africa.
10. Name some of the animals of Africa.

11. Where is the Sudan?
12. What is a caravan?
13. Why are camels the best animals to go across a desert?
14. What goods are carried to the Sudan, and what goods are carried back to the coast?
15. Tell about the Congo State.
16. Tell about the Boers.
17. Why did many English people go to South Africa?
18. Explain how diamonds are obtained.
19. What is done with the diamonds after they are found?
20. Tell about the natives whom the English found in Australia.
21. Describe the animals of Australia.
22. Tell about the sheep ranches and artesian wells.
23. Where are the Philippine Islands?
24. Explain how hemp is raised in the Philippines.
25. Tell about the Hawaiian Islands.
26. Tell about the island of Porto Rico.
27. Name several other large islands.

INDEX AND PRONOUNCING VOCABULARY

KEY TO PRONUNCIATION

a, as in *fat*; *ā*, as in *fate*; *ā*, as in *far*; *ā*, as in *fall*; *e*, as in *pen*; *ē*, as in *mete*; *è*, as in *her*; *i*, as in *pin*; *ī*, as in *pine*; *o*, as in *not*; *ō*, as in *note*; *ō*, as in *move*; *u*, as in *tub*; *ū*, as in *mute*; *ú*, as in *pull*; *g*, as in *get*; *g*, as in *gem*; *c*, as in *cat*; *ç*, as in *cent*.

A double dot under a or o (*ä*, *ö*) indicates that its sound is shortened to that of *u* in *but*.

Italicized letters are silent. The sign ' tells upon which syllable the accent is placed. The numbers refer to pages in the book.

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